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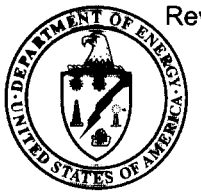
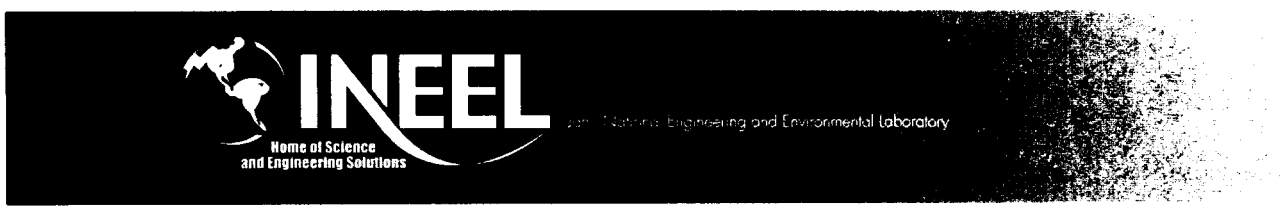


U.S. Department of Energy
Idaho Operations Office

Action Memorandum for Decommissioning of TAN-630 and TAN-650 at the Loss-of-Fluid Test (LOFT) Area

March 2006



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Revision 0

Action Memorandum for Decommissioning of TAN-630 and TAN-650 at the Loss-of-Fluid Test (LOFT) Area

March 2006

Prepared for the
U.S. Department of Energy
DOE Idaho Operations Office

Signature sheet for the Action Memorandum covering the Decommissioning of TAN-630 and TAN-650 at the Loss-of-Fluid Test (LOFT) at the U.S. Department of Energy's Idaho National Laboratory. This action is conducted by the U.S. Department of Energy with the concurrence of the U.S. Environmental Protection Agency and the Idaho Department of Environmental Quality.

Richard B. Provencher
Assistant Manager
U.S. Department of Energy Idaho Operations Office

Date 3/23/06

Signature sheet for the Action Memorandum covering the Decommissioning of TAN-630 and TAN-650 at the Loss-of-Fluid Test (LOFT) at the U.S. Department of Energy's Idaho National Laboratory. This action is conducted by the U.S. Department of Energy with the concurrence of the U.S. Environmental Protection Agency and the Idaho Department of Environmental Quality.

Nicholas Ceto
INEEL Program Manager
Region 10
U.S. Environmental Protection Agency

3/23/06
Date

Signature sheet for the Action Memorandum covering Decommissioning of TAN-630 and TAN-650 at the Loss-of-Fluid Test (LOFT) at the U.S. Department of Energy's Idaho National Laboratory. This action is conducted by the U.S. Department of Energy with the concurrence of the U.S. Environmental Protection Agency and the Idaho Department of Environmental Quality.

Daryl F. Koch
FFA/CO Manager
Waste Management and Remediation Division
Idaho Department of Environmental Quality

3/24/06
Date

ABSTRACT

The U.S. Department of Energy is proposing to decommission TAN-630, the Loss-of-Fluid Test (LOFT) Control and Equipment Building, and TAN-650, the Containment Service Building, at the LOFT area using a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) non-time-critical removal action. The scope of the proposed removal action is limited to TAN-630 and TAN-650. This Engineering Evaluation/Cost Analysis (EE/CA) has been prepared to assist the U.S. Department of Energy Idaho Operations Office in identifying the most effective method for performing the decommissioning of these two structures whose missions ended in 1986. The two structures are located at Test Area North (TAN) within the Idaho National Laboratory (INL) site. The non-time-critical removal action approach satisfies environmental review requirements and provides for stakeholder involvement, while providing a framework for selection of the decommissioning end states. The non-time-critical removal action approach also establishes an Administrative Record for documentation of the implemented action.

The selected alternative consists of the removal of above ground structures and components associated with TAN-630 and TAN-650, the removal of below ground components with the exception of the TAN-650 lower containment system, filling the upper and lower containment building sumps with solid inert material, capping appropriate pipe penetrations, filling the lower containment building proper with solid inert material, and the construction of a long-term viable cover overlaying the TAN-650 upper and lower containment building.

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FIGURES

TABLES

ACRONYMS

ACHP	Advisory Council on Historic Preservation
Ag	Silver
ALARA	As Low As Reasonably Achievable
ANPP	Aircraft Nuclear Propulsion Program
ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
Ci	Curie
cm	centimeters
Co	Cobalt
CRMP	Cultural Resources Management Plan
Cs	Cesium
CTF	Contained Test Facility
D&D	Decommissioning and Demolition
DEQ	Idaho Department of Environmental Quality
DOE-ID	U.S. Department of Energy Idaho Operations Office
dpm	disintegrations per minute
EBSL	Ecological Based Screening Levels
EE/CA	Engineering Evaluation/Cost Analysis
EPA	U.S. Environmental Protection Agency
ESDs	Explanation of Significant Differences
Eu	Europium
FET	Flight Engine Test
g	gram
H	Hydrogen
HWMA	Hazardous Waste Management Act
ICDF	INEEL CERCLA Disposal Facility
IDAPA	Idaho Administrative Procedures Act
INEEL	Idaho National Engineering and Environmental Laboratory

INL	Idaho National Laboratory
Kg	kilogram
L	liter
LCRE	Lithium Cooled Reactor Experiment
LOFT	Loss-of-Fluid Test
m	meter
mg	milligram
MOA	Memorandum of Agreement
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act of 1966
NMSWLF	Non-Municipal Solid Waste Landfill
NTCRA	Non-Time Critical Removal Action
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
pCi	picocurie
ppm	parts per million
RCRA	Resource Conservation Recovery Act
ROD	Record of Decision
Sb	Antimony
SHPO	Idaho State Historic Preservation Officer
SMC	Specific Manufacturing Capabilities
Sr	Strontium
TAN	Test Area North
TBC	to be considered
TSCA	Toxic Substances Control Act
TSF	Technical Support Facility
UST	Underground Storage Tank
VCO	Voluntary Consent Order
WRRTF	Water Reactor Research Test Facility
yr	year
Zn	Zinc

Action Memorandum for the Decommissioning of TAN-630 and TAN-650 at the Loss-of-Fluid Test (LOFT) Area

1. STATEMENT OF BASIS AND PURPOSE

This Action Memorandum documents selection of the non-time-critical removal action recommended in the Decommissioning of TAN-630 and TAN-650 at the Loss-of-Fluid Test (LOFT) Area (DOE/ID-11253). Development of this Action Memorandum has been performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC § 9601 et seq.), as amended by the "Superfund Amendments and Reauthorization Act of 1986 (SARA)" (Public Law 99-499), and in accordance with the "National Oil and Hazardous Substances Pollution Contingency Plan" (40 CFR Part 300). The decision documented in this Action Memorandum is based on the CERCLA Administrative Record for the Site. This removal action is consistent with the remedial action objectives of the Record of Decision and supports the overall remediation goals at Waste Area Group 1. This removal action will place the facility in a configuration that remains protective of human health and the environment. This action is consistent with the joint U.S. Department of Energy (DOE) and U.S. Environmental Protection Agency (EPA) Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act (DOE and EPA 1995), which establishes the CERCLA non-time-critical removal action process as an approach for decommissioning.

TAN-630, commonly referred to as the Control Building, and TAN-650, commonly referred to as the Containment Building, were deactivated in 1986 and have not been productively used since that time. Deactivation included the removal of the reactor core, cleanup, and plant shutdown. The deactivation phase has been completed. Hazardous waste was removed through the Voluntary Consent Order (VCO) process, which constitutes an enforceable agreement with the State of Idaho for addressing RCRA compliance issues.

The selected alternative removes above ground components and structures, collapses and removes floors and concrete walls to 3 feet below grade for TAN-630 and TAN-650 miscellaneous, and fills TAN-630 and TAN-650 miscellaneous to grade with solid inert material. The contaminated sumps, which are in the TAN-650 containment area of LOFT, would be filled with a solid inert material and the piping would be capped. These sumps and embedded pipes are encased in high density, reinforced concrete as far as 30 feet below grade. The upper containment floor, which has sumps and embedded lines, is 4 feet 9 inches of high density, reinforced concrete (Figure 3 and Figure 4). A long-term viable cover (e.g., native soils) will encompass the footprint of the containment dome and the previously filled filter housing room to the east. The annulus voids under this area will be filled with grout providing a stable long-term foundation for the cover. The adjacent areas of TAN-630 and TAN-650 that are demolished to 3 feet below grade will be backfilled with site soils and compacted by processor head and track walking by equipment as feasible. These areas are not under the "long term viable cover" but will be compacted with proper moisture addition to minimize subsidence and safely support equipment and vehicle traffic for the demolition of the containment dome.

The cover would be constructed over the TAN-650 containment building existing grade level floor slab once above ground equipment (including overhead crane), components (including borated water storage tank), ducting, walls and piping to grade have been removed. The long-term viable cover will be overlain with rock armor to prevent inadvertent intrusion on the cover during the DOE institutional control period, and to provide erosion control during heavy runoff events. Specific components of Alternative 2 are as follows:

- TAN-630
  - Remove equipment, ducting, and piping
  - Remove any fixed radiological contamination or contaminated piping
  - Collapse upper floor and remove
  - Collapse concrete walls to 3 feet below grade
  - Fill shell containing collapsed concrete to grade with solid inert material and contour to surroundings.
  - Install boundary at isolation point between SMC and LOFT.

- TAN-650 Upper and Lower Containment Building
  - Remove containment building exterior concrete walls and exterior welded steel walls to grade
  - Remove above-grade equipment, components, ducting, and piping to grade
  - Cut-off and cap appropriate pipe penetrations through upper containment building floor at top-of-concrete floor slab
  - Fill sumps with solid inert material and cap appropriate pipe penetrations
  - Fill lower containment area with solid inert material
  - Fill annulus with solid inert material
  - Create a long-term viable cover, slope to allow for surface water run-off, cover with several feet of native soils overlain by rock armor sloped accordingly (final engineering design dictates field specifications).

- TAN-650 Miscellaneous (remainder of TAN-650, excludes Upper and Lower Containment Building)
  - Remove equipment, ducting, and piping (except for embedded piping)
  - Remove above-ground structures and components
  - Collapse concrete walls to 3 feet below grade
  - Collapse floors
  - Fill shell containing collapsed concrete to grade with solid inert material and contour to surroundings.

2. BACKGROUND AND FACILITY DESCRIPTION

This section provides summary background information, a description of the TAN-630 and TAN-650 buildings, and a discussion of previous cleanup actions in the area.

2.1 Site Description and Background

2.1.1 Test Area North Area, Specifically TAN-630 and TAN-650

TAN was established in the 1950s by the U.S. Air Force for the Atomic Energy Commission Aircraft Nuclear Propulsion Program (ANPP) to support nuclear-powered aircraft research. Upon termination of this research, TAN structures were redirected to support a variety of DOE research projects (Figure 1).

TAN-630, the LOFT Control building, was constructed in 1959 as an integral part of the Flight Engine Test (FET) facility. The FET mission was to prove the feasibility of nuclear powered flight and the TAN-630 structure was constructed to house remote control, measuring, and data analysis associated with the nuclear airplane. The ANPP was cancelled in 1961 before the airplane was built and TAN-630 was never used for its originally intended purpose. After cancellation of the ANPP, TAN-630 and a hangar constructed to house the aircraft were designated for use by a nuclear space program known as the Lithium Cooled Reactor Experiment (LCRE). TAN-630 and the hangar were reconfigured to accommodate the experiments, but the LCRE was cancelled before any actual tests were conducted.

In the late 1970s, TAN-630 and various ANPP/LCRE structures were put back into service in support of reactor loss-of-fluid testing. In 1972, other structures were completed including a containment building, TAN-650, that housed the pressurized water reactor and its related components (Figure 2). The experiments were originally intended to simulate large break loss-of-coolant-accidents. The experiments and equipment were subsequently reconfigured to simulate small break accidents like the one that occurred in 1978 at the Three Mile Island Nuclear Power Plant in Pennsylvania. To demonstrate its ability to achieve shutdown in a runaway situation, the reactor core was intentionally destroyed in the mid-1980s. From 1975 through July 1985, a total of 44 significant experiments were conducted at LOFT. In 1986 at the conclusion of the LOFT project, the decontamination and inactivation effort resulted in the removal of the reactor and other radioactive components from the containment building, decontamination and clean-up, and plant shutdown. TAN-630 and TAN-650 have been in a deactivated condition since that time.

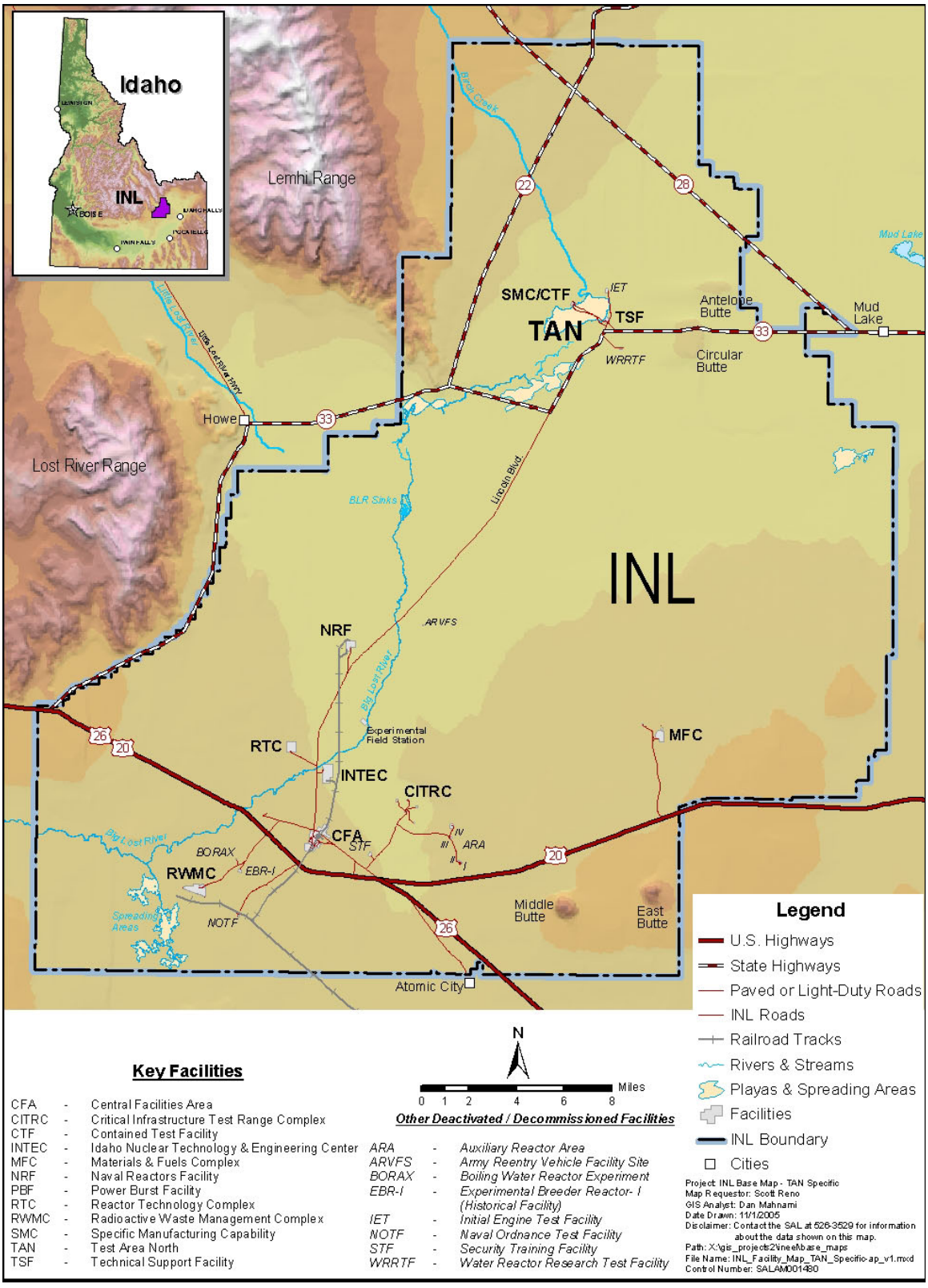

Figure 1. Idaho National Laboratory.

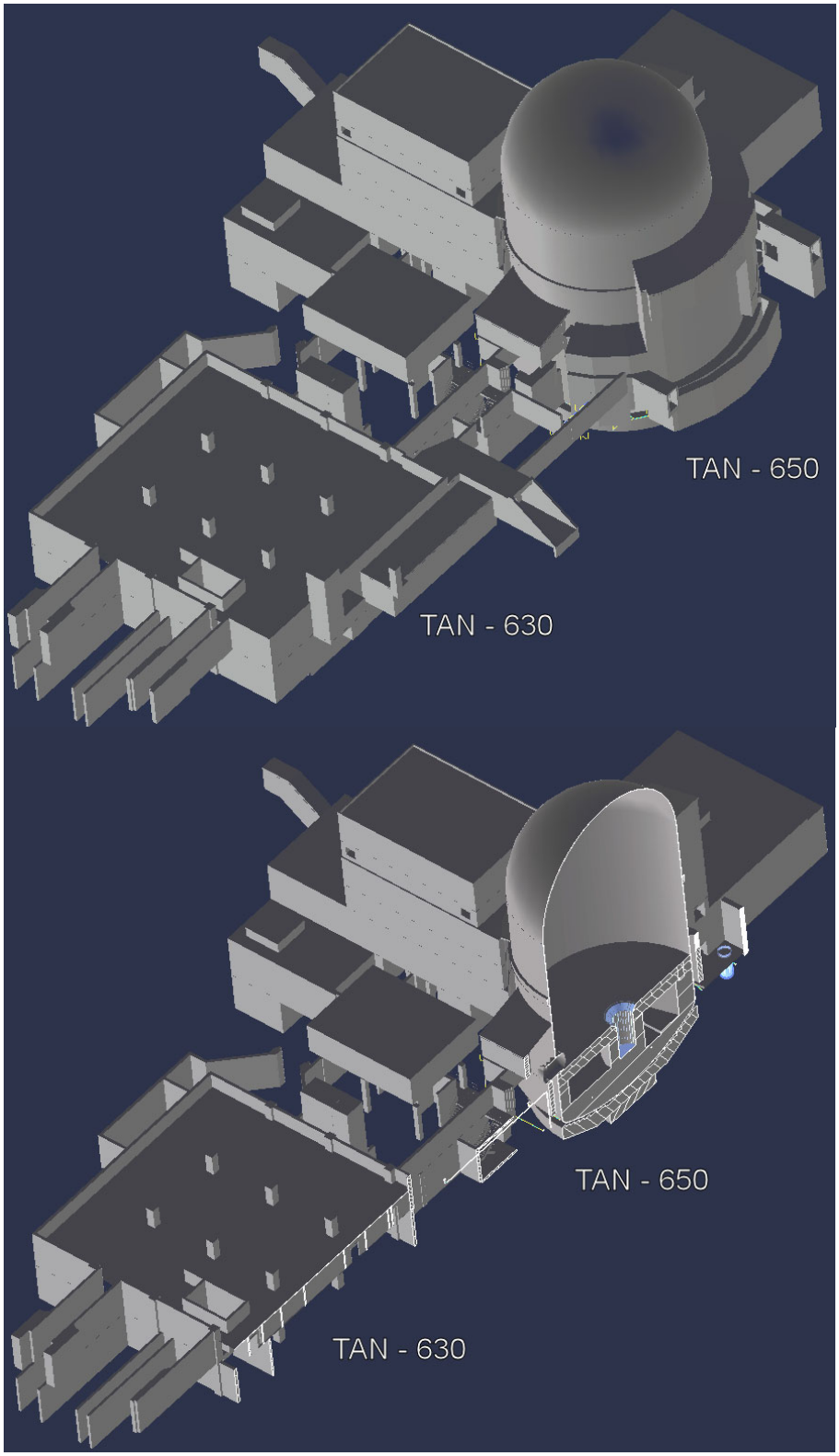

Figure 2. LOFT Area. Isometric views of upper and lower containment dome.

2.2 Previous Closure/Cleanup Activities at TAN-630 and TAN-650

Recent CERCLA activities at TAN have been focused predominantly at the Technical Support Facility (TSF) area, which is approximately 1-mile due east of the LOFT area. Over the last two years, many buildings and structures have been decommissioned and demolished at the TSF (e.g., TAN-615, TAN-616, etc.) and at LOFT (e.g., TAN-726, TAN-725, etc.). *Three heating oil UST's have been cleaned and filled with grout at LOFT [TAN-766(1998), TAN-767A (2005), TAN-767B (2005)]. These tanks were closed under the 40 CFR 280 regulations for underground storage tanks.*

2.2.1 CERCLA Activities

CERCLA remedial actions have occurred or will occur at eight sites in accordance with the *Final Record of Decision, Test Area North, Operable Unit 1-10* (DOE/ID-10682) (ROD). These CERCLA remedial actions are grouped into the following six remedial action groups:

- V-Tanks (TSF-09 and TSF-18) - This action should be completed during the summer of 2006.
- PM-2A Tanks (TSF-26) – This action was completed during the summer of 2005.
- Soil Contamination Area South of the Turntable (TSF-06, Area B) – This action was completed during the summer of 2004.
- Disposal Pond (TSF-07) – This action is on-hold as long as TAN-607 is operational.
- Burn Pits (TSF-03 and WRRTF-01) – This action was completed during the summer and fall of 2004.
- Fuel Leak (WRRTF-13) – This action was completed during the summer of 2004.

Some sites have completed remediation (e.g., the PM-2A Tanks, Burn Pits, etc.) while other sites are under institutional controls (e.g., the Disposal Pond). The V-Tanks are currently undergoing remediation. For two sites, the TSF Injection Well (TSF-05) and the Contaminated Ground Water Beneath TSF (TSF-23), the CERCLA remedial action is addressed by the Operable Unit 1-07B Record of Decision. The remedy will reduce potential risk to human health by reducing groundwater contamination and preventing the ingestion of contaminated groundwater by potential future residents at the site.

2.2.2 Voluntary Consent Order Activities

Eighteen tank systems comprising 79 tanks located in TAN-630 and TAN-650 at the LOFT area were identified as covered matters in the SITE-TANK-005 Action Plan of the Voluntary Consent Order (VCO), an enforceable agreement with the IDEQ that addressed several RCRA compliance issues. RCRA actions have been completed for these tanks. Seventeen of the tank systems (75 tanks) were characterized as RCRA non-hazardous or empty. One tank system was characterized as hazardous and the RCRA closure of this VCO Tank System TAN-020 was completed in 2005. This closure was completed in accordance with the *HWMA/RCRA Closure Plan Addressing the HTRE-3 Mercury Spill at TAN/CTF (LOFT)* (DOE/ID-11097, December 2004, Rev 4).

Closure activities addressed units and ancillary equipment within the containment building that were contaminated by HWMA/RCRA hazardous constituents during decontamination and decommissioning of the Heat Transfer Reactor Experiment Number 3 (HTRE-3) test engine. Closure activities also addressed ancillary equipment that transferred chromated wastewater from the mobile test assembly shield tank during facility deactivation. Piping and sumps were decontaminated for mercury as part of the closure activities and in the process radiological contamination was reduced through the removal of sludge and sediment in the sumps and piping. Closure activities, which were completed in April 2005, are summarized below.

- Residual waste removal - Residual solids in the pressure reduction and decontamination sump, high level radioactive waste sump, filter sump, and condensate sump were removed. Liquid contained within piping was drained. Solids present in the system piping in excess of the criteria specified in the closure plan were removed and disposed off-site.

- Piping and ancillary equipment removal - Most piping and ancillary equipment were removed in lieu of decontamination and disposed off-site.

- Decontamination of system components - In cases where removal was not feasible, such as sumps, drains, and portions of lines embedded in concrete, system components were decontaminated by removing the accumulated debris and following-up with pressure washing. Primary system components that were decontaminated included: the filter sump and a portion of the upper containment building floor and peripheral trench that drained to the sump; the condensate sump and the portion of the upper containment building floor that drained to the sump; the pressure reduction and decontamination sump and associated embedded piping; and the high level waste sump and its associated piping. Rinsate generated during the decontamination process was disposed off-site.

- Decontamination of secondary containment structures - Inspections of the test chamber concrete floor indicated that the epoxy-paint liner had been damaged and bare concrete exposed. These damaged areas were decontaminated by using a physical extraction technology (e.g., scabbling and shaving). Waste-related residues were present on portions of the floor, walls, and ceiling in the southeast quadrant of the containment building basement. Areas with visible waste-related residues and the entire floor were decontaminated using a physical extraction technology (e.g., scabbling, grit blasting, and shaving).

On May 5, 2005, DOE-ID submitted the signed Owner/Operator Certification and the Professional Engineer's closure certification report and supporting documentation to the DEQ documenting completion of the RCRA closure. On July 21, 2005 DEQ transmitted correspondence acknowledging completion of activities specified in the approved closure plan.

2.3 Current Closure/Cleanup Activities at TAN-630 and TAN-650

The CERCLA site LOFT-02, the LOFT Disposal Pond (north of TAN-650), exhibits an ecological risk above threshold levels, but not an unacceptable risk to human health. This site will be further evaluated in the site-wide ecological risk assessment.

During 2004 and 2005, major system components at TAN-630 AND TAN-650 were either removed or decontaminated. RCRA regulated components (e.g., silver and lead found in the contact points of high voltage breakers, lead contaminated brass and bronze in the form of sprinkler heads and valves) in TAN-630 and TAN-650 were removed and managed in accordance with federal, state, and local regulations and disposed off-site. During that timeframe, asbestos abatement was also performed in both TAN-630 and TAN-650.

3. THREAT TO PUBLIC HEALTH, WELFARE, AND/OR THE ENVIRONMENT

3.1.1 Remaining Radionuclide Inventory

Conditions at this site meet the criteria for a non-time critical removal action as stated in the National Contingency Plan (NCP), 40 CFR 300.415, as follows:

Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations or the food chain [300.415(b) (2) (i)]. While access to the Site is restricted, there is the potential that over time the structure will decay and the radionuclides could be released into the environment. This would create the potential for exposure to high concentrations of radionuclides via inhalation of wind blown dust from the debris, tailings pile, or direct ingestion of contaminated soils, by nearby populations and users of the Site.

Actual or potential contamination of a drinking water supply or sensitive ecosystem (300.415(b) (2) (ii)). If no action is taken there exists a potential for the contaminants to migrate to the Snake River Plain Aquifer and result in exceedances of the MCLs.

High levels of hazardous substances or pollutants in soils largely at or near the surface that may migrate (300.415(b) (2)(iv)). The total activity from radionuclides at this site is 0.155 curies.

Upper surfaces of the interior walls of the upper containment building dome, the circular crane system, and the ventilation ducting along the east side of the containment dome have fixed radioactive contamination. These contaminated surfaces would be difficult to decontaminate due to the height above the floor of the containment dome. Fixed radioactive contamination remains in the sumps and associated embedded piping in the TAN-650 lower containment. The borated water storage tank, a 42,000 gallon radiologically contaminated tank, is located on the top floor of the TAN-650 tower. Basement sumps and piping drains, excluding the containment building, were grouted in place during 2005 to prevent water infiltration from the undefined perched layer. The sumps had been previously RCRA closed. Minor amounts of radiological contamination also exist in some areas of TAN-650 from overflows of sumps or minor spills or releases. The remaining radionuclide inventory will be managed in accordance with the actions specified in the selected alternative.

The largest radiological source term is in the contaminated sumps and associated piping remaining in TAN-650. A profile drawing of the sumps and associated embedded piping for the TAN-650 containment area are illustrated in Figure 3 and Figure 4. Minor amounts of radiological contamination from overflows or minor spills or releases in TAN-650 do not significantly contribute to the radiological source term that will remain. Therefore, to ensure the remaining radiological inventory is bounded; conservative estimates from the sumps and associated piping in TAN-650 were used. The radionuclide inventories for the piping were determined using analyses illustrated in EDF-6355 and embedded piping data summaries and sump area summaries provided by LOFT engineering staff. The following assumptions were used in the development of the radionuclide inventory:

- Contaminants are dispersed inside horizontal piping along the lower 50% of the length.

- Contaminants are dispersed inside vertical piping along the lower 50% of the length for conservatism. Vertical piping is less contaminated than horizontal piping due to the physics of fluids, gravity, and the plating out effect of settling contamination (EDF-6355).

- The highest removable contamination level (i.e., 13,000,000 dpm/100 cm^2) for horizontal high level waste sump piping was assigned to the TAN-650 piping, as a conservative estimate (Figure 4). (Note: The high level waste sump did not hold irradiated fuel as implied by the name itself. Piping and sumps were decontaminated for mercury as part of the RCRA closure activities and in the process radiological contamination was reduced through the removal of sludge and sediment in the sumps and piping.)

- The radionuclide inventories were decayed for 90 years to account for the piping and concrete foundation remaining structurally stable during the time through 2095 that DOE is anticipated to maintain control of the facility. There are many variables in correlating total curies to an estimated dose rate. The curies in the LOFT facility are a cumulative of several radioactive isotopes with Cs-137 being 87% of the total curie content. During the ongoing decontamination phase at the LOFT facility, removal of contaminated areas will continue. With the implementation of the preferred alternative, it is calculated that there will be approximately .008 to .01 mR/h at the end of the Institutional Control period. This is within the range of background levels. As a comparison, a simple medical imaging such as a chest x-ray will result in approximately 2mR. Unrestricted land use is anticipated at the end of the Institutional Control period.

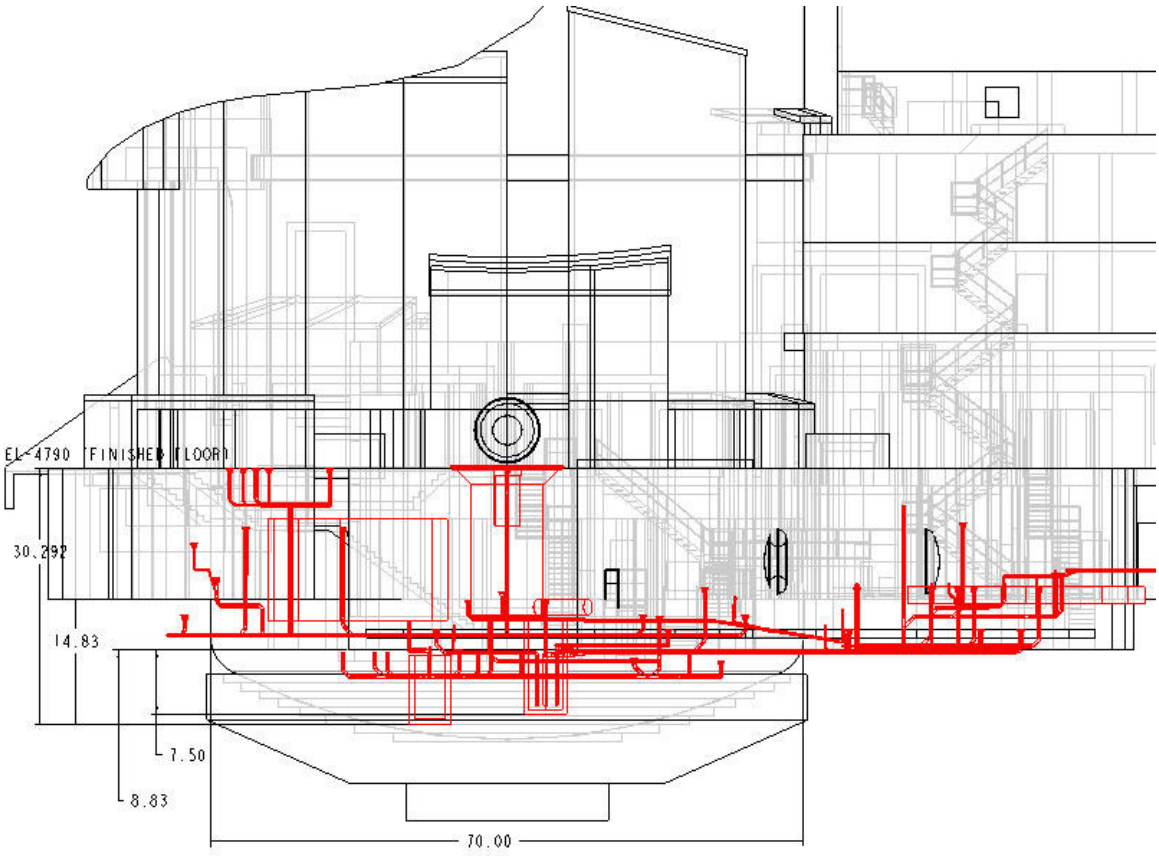

Figure 3. TAN-650 cross-section illustrating sumps and embedded piping.

A total contaminated surface area for the embedded piping (i.e., bottom half of the piping) was determined to be 5.4×10^5 cm^2, approximately 63 square feet. The radionuclide inventories for the sumps were also determined using the highest removable contamination level (i.e., 13,000,000 dpm/100 cm^2) for high level waste sump piping, which is a conservative estimate based on process knowledge of the system and knowing that activities are not expected to be higher since the high level waste sump piping would have been exposed to the highest radiological contamination. A total contaminated surface area for the sumps was determined to be 2.07×10^6 cm^2, approximately 2,228 square feet. The radionuclide inventory for Year 2005 is shown in Table 1. Currently it is assumed that there will be no additional increase of radiation exposure above background to the worker or member of the public once the actions specified in the selected alternative are implemented. The radionuclide inventory for Year 2095 is shown in Table 2. The total activity for 2005 is 0.155 curies. The total activity for 2095 is 0.018 curies.

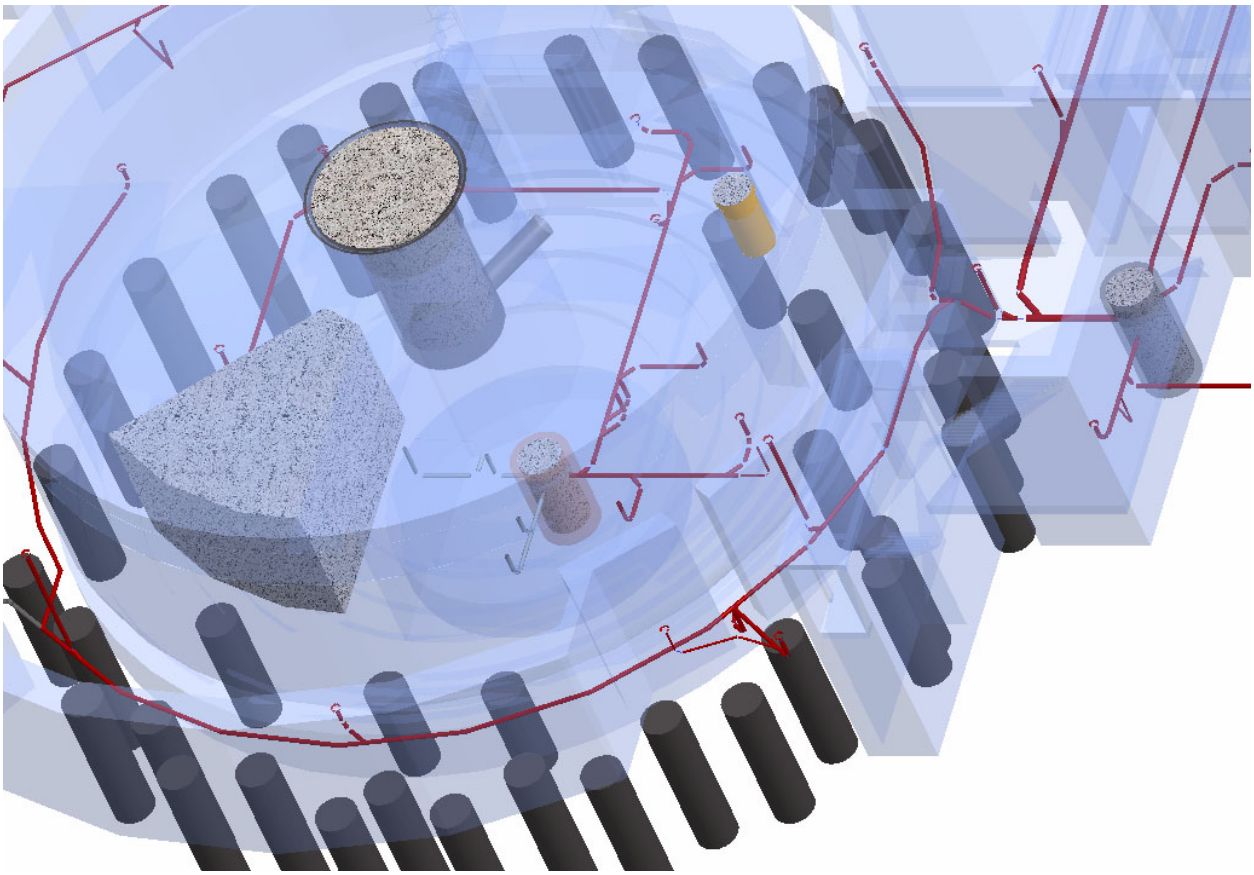

Figure 4. Isometric view of TAN-650 containment sumps and piping.

Table 1. TAN-650 Year 2005 Radionuclide Piping and Sump Inventories.

Nuclide	Half-Life (yr)	% Abundant	Piping 2005 Activity (Ci)	Sumps 2005 Activity (Ci)	Total 2005 Activity (Ci)
Ag-108m	130	0.0010	3.42E-07	1.21E-06	1.55E-06
Co-60	5.27	9.0000	3.08E-03	1.09E-02	1.40E-02
Cs-134	2.06	0.0043	1.47E-06	5.21E-06	6.68E-06
Cs-137[a]	30.07	87.0000	2.98E-02	1.05E-01	1.35E-01
Eu-152	13.54	0.0100	3.42E-06	1.21E-05	1.55E-05
Eu-155	4.75	0.0066	2.26E-06	8.00E-06	1.03E-05
H-3	12.32	0.0062	2.12E-06	7.52E-06	9.64E-06
Sb-125	2.76	0.0900	3.08E-05	1.09E-04	1.40E-04
Sr-90[a]	28.78	3.7600	1.29E-03	4.56E-03	5.84E-03
Zn-65	0.6675	0.1190	4.07E-05	1.44E-04	1.85E-04
				Total	0.155

a. Activities do not include progeny (i.e., Ba-137m and Y-90).

Table 2. TAN-650 Year 2095 Radionuclide Piping and Sump Inventories.

Nuclide	Half-Life (yr)	% Abundant	Piping 2095 Activity (Ci)	Sumps 2095 Activity (Ci)	Total 2095 Activity (Ci)
Ag-108m	130	0.0010	2.12E-07	7.50E-07	9.62E-07
Co-60	5.27	9.0000	2.23E-08	7.91E-08	1.01E-07
Cs-134	2.06	0.0043	1.04E-19	3.70E-19	4.74E-19
Cs-137[a]	30.07	87.0000	3.74E-03	1.33E-02	1.70E-02
Eu-152	13.54	0.0100	3.42E-08	1.21E-07	1.55E-07
Eu-155	4.75	0.0066	4.48E-12	1.59E-11	2.03E-11
H-3	12.32	0.0062	1.34E-08	4.76E-08	6.10E-08
Sb-125	2.76	0.0900	4.72E-15	1.67E-14	2.15E-14
Sr-90[a]	28.78	3.7600	1.47E-04	5.22E-04	6.69E-04
Zn-65	0.6675	0.1190	1.07E-45	3.80E-45	4.87E-45
				Total	0.018

a. Activities do not include progeny (i.e., Ba-137m and Y-90).

3.1.2 Remaining Nonradionuclide Inventory

Deactivation activities (e.g., removal of diesel fuel lines, electrical conduit, etc.) are nearing completion in TAN-630. Oversized remaining units and equipment (e.g., industrial-sized boilers, duct work, etc.) will be removed and disposed of during decommissioning. Minor asbestos removal activities are currently on-going in TAN-630 and TAN-650 and will be completed prior to decommissioning. The painted surfaces that could potentially contain PCBs over 50 ppm will be removed and sent to the TAN Demolition Landfill, this being in accordance with 40 CFR 761.62(b)(1). The TAN-630 control room equipment will be removed and properly disposed of in accordance with the schedule.

4. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this Site have the potential to present a threat to public health or the environment.

This section provides information regarding the proposed action and alternatives considered.

4.1 Proposed Action

The proposed action removes above ground components and structures, collapses and removes floors and concrete walls to 3 feet below grade for TAN-630 and TAN-650 miscellaneous, TAN-630 and TAN-650 miscellaneous will be filled to grade with solid inert material (i.e. soil, concrete, etc.). The contaminated sumps, which are in the TAN-650 containment area of LOFT, would be filled with a solid inert material and the piping would be capped. These sumps and embedded pipes are encased in high density, reinforced concrete as far as 30 feet below grade. The upper containment floor, which has sumps and embedded lines, is 4 feet 9 inches of high density, reinforced concrete (Figure 3 and Figure 4). A long-term viable cover (e.g., native soils) will encompass the footprint of the containment dome and the previously filled filter housing room to the east. The annulus voids under this area will be filled with grout providing a stable long-term foundation for the cover. The adjacent areas of TAN-630 and TAN-650 that are demolished to 3 feet below grade will be backfilled with site soils and compacted by processor head and track walking by equipment as feasible. These areas are not under the "long term viable cover" but will be compacted with proper moisture addition to minimize subsidence and safely support equipment and vehicle traffic for the demolition of the containment dome.

The cover would be constructed over the TAN-650 containment building existing grade level floor slab once above ground equipment (including overhead crane), components (including borated water storage tank), ducting, walls and piping to grade have been removed. The long-term viable cover will be overlain with rock armor to prevent inadvertent intrusion on the cover during the DOE institutional control period, and to provide erosion control during heavy runoff events. Specific components of Alternative 2 are as follows:

4.2 Removal Action Objectives

The removal action objective for this non-time critical removal action is as follows: Reduce risk from external radiation exposure from Cs-137 to a total excess cancer risk of less than 1 in 10,000 for a hypothetical resident 100 years in the future from the year 1995 and the current and future worker. Per the OU 1-10 ROD, the LOFT area will be under the control of the government until 2095. In addition, at INL, the standard for the protection of the Snake River Plain aquifer is to prevent any release that could result in exceedances of the Maximum Contaminant level (MCL) and insure that the site is available for unrestricted use in the future. If such a standard is not met then institutional controls will have to remain in place.

The removal action objective is consistent with the remedial action objectives of the ROD. The removal action objective is predicated on the current and future land uses established for the TAN area in the ROD, which includes industrial land use until at least 2095 and possible residential land use thereafter. If any newly identified release sites are discovered during implementation of the selected alternative, DOE-ID will consult with DEQ and EPA regarding potential inclusion of the newly identified release site for evaluation under the FFA/CO or whether to address the newly identified release site under other regulatory programs.

4.3 Engineering Evaluation/Cost Analysis

4.3.1 Alternative 1

This alternative removes above ground components and structures, collapses and removes floors and concrete walls to 3 feet below grade, and removes sump liners, sumps, and piping (including embedded piping). Radiological contamination would be removed. The remaining shell would then be filled to grade with solid inert material (e.g., clean soil, concrete). An approximate cost of $30,000,000 is estimated. The specific components of Alternative 1 are as follows:

- TAN-630
  - Remove equipment, ducting, and piping
  - Remove any fixed contamination or contaminated piping
  - Collapse upper floor and remove material
  - Collapse concrete walls to 3 feet below grade
  - Fill shell containing collapsed concrete to grade with solid inert material (soil, fill, etc.) and contour to surroundings.
  - Install boundary at isolation point between SMC and LOFT.
- TAN-650 Upper and Lower Containment Building
  - Remove above ground structures and components
  - Remove containment building exterior concrete walls to 3 feet below grade
  - Remove containment building welded-steel walls to 3 feet below grade
  - Remove upper containment concrete floor
  - Remove sump liners, sumps, and piping (including embedded piping)
  - Fill to grade with solid inert material (soil, fill, etc.) and contour to surroundings.

- TAN-650 Miscellaneous (remainder of TAN-650, excludes Upper and Lower Containment Building)
    - Remove equipment, ducting, and piping (including embedded piping)
    - Remove above-ground structures and components
    - Collapse concrete walls to 3 feet below grade
    - Collapse floors
    - Fill shell containing collapsed concrete to grade with solid inert material (soil, fill, etc.) and contour to surroundings.

4.3.2 Alternative 2

This alternative removes above ground components and structures, collapses and removes floors and concrete walls to 3 feet below grade for TAN-630 and TAN-650 miscellaneous, fills TAN-630 and TAN-650 miscellaneous to grade with solid inert material. The contaminated sumps, which are in the TAN-650 containment area of LOFT, would be filled with a solid inert material (i.e. grout, concrete, etc.) and the piping would be capped. These sumps and embedded pipes are encased in high density, reinforced concrete as far as 30 feet below grade. The upper containment floor, which has sumps and embedded lines, is 4 feet 9 inches of high density, reinforced concrete (Figure 3 and Figure 4). A long-term viable cover (e.g., native soils) will encompass the footprint of the containment dome and the previously filled filter housing room to the east. The annulus voids under this area will be filled with grout providing a stable long-term foundation for the cover. The adjacent areas of TAN-630 and TAN-650 that are demolished to 3 feet below grade will be backfilled with site soils and compacted by processor head and track walking by equipment as feasible. These areas are not under the “long term viable cover” but will be compacted with proper moisture addition to minimize subsidence and safely support equipment and vehicle traffic for the demolition of the containment dome.

The cover would be constructed over the TAN-650 containment building existing grade level floor slab once above ground equipment (including overhead crane), components (including borated water storage tank), ducting, walls and piping to grade have been removed. The long-term viable cover will be overlain with rock armor to prevent inadvertent intrusion on the cover during the DOE institutional control period, and to provide erosion control during heavy runoff events. An approximate cost of $21,719,000 is estimated. Specific components of Alternative 2 are as follows:

- TAN-630
    - Remove equipment, ducting, and piping
    - Remove any fixed contamination or contaminated piping
    - Collapse upper floor and remove
    - Collapse concrete walls to 3 feet below grade
    - Fill shell containing collapsed concrete to grade with solid inert material (i.e. soil, fill, etc.) and contour to surroundings.
    - Install boundary at isolation point between SMC and LOFT.

- TAN-650 Upper and Lower Containment Building
  - Remove containment building exterior concrete walls and exterior welded steel walls to grade
  - Remove above-grade equipment, components, ducting, and piping to grade
  - Cut-off and cap appropriate pipe penetrations through upper containment building floor at top-of-concrete floor slab
  - Fill sumps with solid inert material and cap appropriate pipe penetrations
  - Fill lower containment area with solid inert material (i.e. concrete, grout, etc.)
  - Fill annulus with solid inert material
  - Create a long-term viable cover, slope to allow for surface water run-off, cover with several feet of native soils overlain by rock armor sloped accordingly (final engineering design dictates field specifications)

- TAN-650 Miscellaneous (remainder of TAN-650, excludes Upper and Lower Containment Building)
  - Remove equipment, ducting, and piping (except for embedded piping)
  - Remove above-ground structures and components
  - Collapse concrete walls to 3 feet below grade
  - Collapse floors
  - Fill shell containing collapsed concrete to grade with solid inert material (i.e. soil, fill, etc.) and contour to surroundings

4.3.3 Alternative 3

Alternative 3 is the no action alternative. The no action alternative provides a baseline against which the impacts of the other alternatives can be compared. Under the no action alternative, removal actions would not be undertaken. Continued surveillance and maintenance of TAN-630 and TAN-650 would remain at the current level of "cold, dark, and dry" through 2095 or until a future D&D is undertaken. A concrete structure (block, pour, etc.) will be installed at the isolation point between SMC and LOFT. This will ensure that all requirements under the EE/CA are met on the LOFT DD&D. An approximate cost of $504,000 is estimated. These costs represent the cost, through 2095, of having personnel enter the facility to ensure it is safe, it does not represent the cost of major repairs to the facility.

A comparison of the Alternatives is shown in Table 3 below.

Table 3. Comparison of Alternatives.

End State	Alternative 1 Remove Radioactive Contamination			Alternative 2 Radioactive Contamination Remaining in Four Sumps and Associated Lines			Alternative 3 No Action
	TAN-630	TAN-650 Containment Structure	TAN-650 Miscellaneous	TAN-630	TAN-650[a] Containment Structure	TAN-650[a] Miscellaneous	
Remove Above Ground Structures and Components	Yes	Yes	Yes	Yes	Yes	Yes	No Action
Remove Equipment, Ducting, and Piping	Yes	Yes	Yes	Yes	Yes	Yes	
Remove Embedded Piping	N/A	Yes	Yes	N/A	No	No	
Remove Embedded Conduit	No	No, Unless Contaminated	No, Unless Contaminated	No	No	No	
Collapse and Remove Ground-Level Floor	Yes	Yes	Yes	Yes	No	Yes	
Collapse Walls to 3 Feet Below Grade	Yes	Yes	Yes	Yes	No – Containment Structure Exterior Concrete Walls/ Steel Walls removed to Grade	Yes	No Actions
Remove Sump Liners, Sumps, and/or Piping	Yes	Yes	Yes	No	No	No	
Cut-Off Pipe Penetrations Through Upper Containment Structure Floor at Top-of-Concrete Floor Slab	N/A	N/A	N/A	N/A	Yes	N/A	
Fill to Grade with Solid Inert Material	Yes	Yes	Yes	Yes	Yes	Yes	
Pour solid Inert material in Sumps & Cap Penetrations	N/A	No	N/A	N/A	Yes	N/A	
Fill Annulus and Lower Containment Area with Solid Inert Material	N/A	N/A	N/A	N/A	Yes	N/A	
Build Long-Term Viable Cover	No	No	No	No	Yes	No	
Cover with Native Soil and Rock Armor	No	No	No	No	Yes	No	
Install boundary at isolation point between SMC and LOFT	Yes	N/A	N/A	Yes	N/A	N/A	Yes

a. See Tables 1 and 2 for total Curies of radioactive contamination in 2005 and 2095.

4.4 Compliance with Environmental Regulations, Including those that are Applicable, or Relevant and Appropriate Requirements

4.4.1 CERCLA

Section 121 of CERCLA (42 USC § 9621) requires the responsible CERCLA implementing agency to ensure that the substantive standards of HWMA/RCRA and other applicable laws will be incorporated into the federal agency's design and operation of its long-term remedial actions and into its more immediate removal actions. The DOE-ID is the implementing agency for this non-time-critical removal action. The EPA and DEQ have reviewed the EE/CA and provide concurrence in this Action Memorandum. Through the non-time-critical removal action process, the risks presented in this document will be mitigated in a timely manner.

Alternative 2 is the preferred alternative because of its effectiveness, implementability, and cost. Alternative 3 initially appears to have the least cost associated with the no-action alternative, yet the unknowns associated with implementation of this alternative cannot be calculated with any degree of certainty and thus compliance with environment regulations can also not be determined with any degree of certainty. Compliance with environment regulations can be achieved through implementation of Alternative 1, yet Alternative 1 is the most costly and poses the most risk to the worker due to the intensive nature of the work required in Alternative 1. Alternative 2 clearly achieves the removal action goals in a timely and cost effective manner. Implementation of Alternative 2 will ensure compliance with environmental regulations, including those that are applicable or relevant and appropriate requirements (ARARs).

Implementation of Alternative 2 will result in the generation and subsequent management of radioactive and non-radioactive wastes. Table 7 lists the proposed ARARs that have been identified for this alternative. These ARARs are a compilation and expansion of the ARARs identified in the OU 1-10 Record of Decision (DOE-ID 1999). The ARARs list is based on several key assumptions:

- Any residual contamination left in-place will meet the Remedial Action Objectives (RAOs) established in the OU 1-10 ROD and associated ROD Amendments and Explanation of Significant Differences (ESDs).

- Management of CERCLA waste generated during the removal action will be subject to meeting the waste acceptance criteria of the ICDF Landfill and TAN Demolition Landfill.

- If decontamination liquids are generated, they will be disposed at the ICDF Evaporation Ponds in accordance with the facility waste acceptance criteria.

- Asbestos-containing material may be encountered incidental to performance of the NTCRA. This waste will be subject to specific asbestos regulations and will be acceptable for disposal at the ICDF and/or, if not radiologically contaminated, at the TAN Demolition Landfill. Friable asbestos will be removed and disposed as required by NESHAPs.

4.4.2 Voluntary Consent Order

VCO actions have been implemented to ensure compliance with environmental regulations. These VCO actions are summarized as follows:

- Eighteen tank systems comprising 79 tanks located in TAN-630 and TAN-650 at the LOFT area were identified as covered matters in the SITE-TANK-005 Action Plan of the Voluntary Consent Order (VCO). RCRA actions have been completed for these tanks and they have been moved to Appendix C of the VCO as a closed matter. This includes the RCRA closure of VCO System TAN-020 and HTRE-III Mercury Contaminated Sumps (4 tanks), which was completed in 2005 and described in Section 2.2.2 above.

- The other 17 tank systems (75 tanks) were characterized as RCRA non-hazardous or empty. Included in this group is VCO System TAN-010 TAN/CTF (LOFT) Boiler Fuel Oil System, which the DEQ agreed to move to Appendix C of the VCO as a closed matter provided that the system is closed under 40 CFR Part 280 UST requirements. This closure action is presently underway and should be completed prior to the end of this calendar year.

Non-VCO RCRA actions have been implemented to ensure compliance with environmental regulations. These non-VCO actions are summarized as follows:

- In 1994 and 1995, potential hazardous materials such as lead, mercury switches, and silver solder were removed from TAN-630 and TAN-650.

- In 1996, the TAN-726 Chromate Water Storage Unit and TAN-726A Chromate Treatment Unit (2 tanks total) were RCRA closed. The two tanks were removed in September 2005.

- During 2004 and 2005, major system components at TAN-630 AND TAN-650 were either removed or decontaminated. RCRA regulated components (e.g., silver and lead found in the contact points of high voltage breakers, lead contaminated brass and bronze in the form of sprinkler heads and valves) in TAN-630 and TAN-650 were removed and managed in accordance with federal, state, and local regulations. During that timeframe, asbestos abatement was also performed in both TAN-630 and TAN-650.

4.4.3 Cultural Resources

Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended, requires agencies to consider the impact of undertakings on properties listed or eligible for listing in the National Register of Historic Places, and to consult with the Idaho State Historic Preservation Officer (SHPO) and other interested parties when impacts are likely. It also requires federal agencies to invite the Advisory Council on Historic Preservation (ACHP) to participate in consultation when impacts may be adverse. The Section 106 process has been tailored to meet the unique needs of the INL site and is described in the INL Cultural Resources Management Plan (CRMP). Section 110 of the NHPA directs federal agencies to establish programs to find, evaluate, and nominate eligible properties to the National Register of Historic Places, including previously unidentified historic properties that may be discovered during the implementation of a project (36 CFR 800). In addition, the Archaeological Resources Protection Act of 1979, as amended, provides for the protection and management of archaeological resources on federal lands. The INL CRMP is implemented through a Programmatic Agreement between the DOE Idaho Operations Office (DOE-ID), the Idaho SHPO and the ACHP.

Both TAN-630 and TAN-650 are historic properties, eligible for nomination to the National Register of Historic Places. TAN-630 and TAN-650 have been designated as Signature Properties by DOE HQ. LOFT was the only nuclear reactor test facility in the world designed to simulate, as closely as possible, the important events that could occur during loss-of-coolant accidents and other accidents (transients) in commercial pressurized water reactor power plants. The experiments conducted at LOFT provided measurements of actual physical events to be compared with calculations of the analytical computer codes that predict reactor response to such accidents. Experimental data was then used to evaluate and improve predictive codes which the Nuclear Regulatory Commission used in licensing conditions for nuclear power plants. The information also aided the Nuclear Regulatory Commission in making regulatory decisions and was used in developing personnel with the skills and knowledge to assess reactor behavior, apply computer codes, and interpret the results. TAN-630 and TAN-650 are eligible to the National Register of Historic Places through their association with the LOFT program and for their design and workmanship.

The DOE Idaho Operations Office has made the decision to proceed with demolition of the TAN 630 and TAN-650 properties. To mitigate the adverse impacts caused by such action, the DOE Idaho Operations Office, through formal consultation with the Idaho SHPO, has developed a Memorandum of Agreement that outlines measures to preserve the LOFT history, as well as, commitments to edit and republish a public history book on the INL, publish and distribute historical reports that are written for inclusion in the Library of Congress collections, endow a university scholarship for students pursuing a degree in a preservation-related discipline, and to preserve technical reports, engineering drawings, historic photographs, and other important documents in an INL archive via the support of a professional archivist. The DOE-ID invited the Advisory Council to participate in consultation and to be a signature to the MOA. However, the Advisory Council declined to participate. The MOA was signed by DOE-ID and the Idaho SHPO in October 2005 and outlines a schedule for completion of each stipulated mitigation measure.

DOE is required to review as guidance the most current United States Fish and Wildlife Service list for threatened and endangered plant and animal species. DOE-ID determined that none of the alternatives would impact any threatened and endangered species and also determined that formal consultation with the United States Fish and Wildlife Service is not required for this action.

Table 4. Summary of Applicable or Relevant and Appropriate Requirements for LOFT TAN-630 and TAN-650, Non-Time Critical Removal Action.

Requirement (Citation)	ARAR Type	Comments
Clean Air Act and Idaho Air Regulations		
"Toxic Substances," IDAPA 58.01.01.161	A	Applies to any toxic substances emitting during implementation of the removal action.
<10 mrem/yr, 40 CFR 61.92, "Standard"	A	Applies to the waste-handling activities.
"Emission Monitoring and Test Procedures," 40 CFR 61.93	A	Applies to the waste-handling activities.
"Compliance and Reporting," 40 CFR 61.94(a)	A	Applies to the waste-handling activities.
"Standards for Demolition and Renovation," 40 CFR 61.145 and 40 CFR 61.150	A	Applies to any asbestos-containing materials removed during the decommissioning.
"Rules for Control of Fugitive Dust," and "General Rules," IDAPA 58.01.01.650 and .651	A	Applies to the waste-handling activities.
RCRA and Idaho Hazardous Waste Management Act		
"Standards Applicable to Generators of Hazardous Waste," IDAPA 58.01.05.006, and the following, as cited in it:		
"Hazardous Waste Determination," 40 CFR 262.11	A	Applies to waste that would be generated during the removal action.
NRC Compliance		
10 CFR 61	R	Waste classification that sets Cs-137 criterion of 1 Ci/m^3 for Class A shallow disposal
General Facility Standards:		
IDAPA 58.01.05.008, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," and the following, as cited in it:		
"Temporary Units (TU)," 40 CFR 264.553	A	Waste may be treated or temporarily stored in a temporary unit prior to disposal.
"Staging Piles," 40 CFR 264.554	A	Waste may be temporarily staged prior to disposal.
"General Inspections Requirements," 40 CFR 264.15	A	Applies to a facility staging, storing, or treating hazardous waste prior to transfer to the ICDF or an off-Site facility.
"Preparedness and Prevention," 40 CFR 264, Subpart C	A	Applies to a facility staging, storing, or treating hazardous waste prior to transfer to the ICDF or an off-Site facility.
"Contingency Plan and Emergency Procedures," 40 CFR 264, Subpart D	A	Applies to a facility staging, storing, or treating hazardous waste prior to transfer to the ICDF or an off-Site facility.
"Disposal or Decontamination of Equipment, Structures, and Soils," 40 CFR 264.114	A	Applies to contaminated equipment used to remove, treat, or transport hazardous waste.

Table 4. (continued).

Requirement (Citation)	ARAR Type	Comments
"Use and Management of Containers," 40 CFR 264.171–178	A	Applies to containers used during the removal and treatment of hazardous waste.
Land Disposal Restrictions		
IDAPA 58.01.05.011, "Land Disposal Restrictions," and the following, as cited in it:		
"Applicability of Treatment Standards," 40 CFR 268.40(a)(b)(e)	A	Applies to hazardous waste and secondary waste, if treatment is necessary to meet the disposal facility's waste acceptance criteria or if treatment is required before placement.
"Treatment Standards for Hazardous Debris," 40 CFR 268.45	A	Applies to hazardous debris, if treatment is necessary to meet the disposal facility's waste acceptance criteria or if treatment is required before placement.
"Universal Treatment Standards," 40 CFR 268.48(a)	A	Applies to non-debris hazardous waste and secondary waste, if treatment is necessary to meet the disposal facility's waste acceptance criteria or if treatment is required before placement.
"Alternative LDR Treatment Standards for Contaminated Soil," 40 CFR 268.49	A	Applies to contaminated soil, if treatment is necessary to meet the disposal facility's waste acceptance criteria or if treatment is required before placement.
Idaho Groundwater Quality Rules		
"Ground Water Quality Rule," IDAPA 58.01.011	A	The waste-handling activities must prevent migration of contaminants from the reactor complexes that would cause the Snake River Plain Aquifer groundwater to exceed applicable State of Idaho groundwater quality standards in 2095 and beyond.
TSCA		
"Decontamination Standards and Procedures: Decontamination Standards," 40 CFR 761.79(b)(1)	A	Applicable to decontamination of equipment with PCB contamination, if PCB waste is generated.
"Decontamination Standards and Procedures: Self-Implementing Decontamination Procedures," 40 CFR 761.79(c)(1) and (2)	A	Applicable to decontamination of equipment with PCB contamination, if PCB waste is generated.
"Bulk Product Disposition," 40 CFR 761.62(b)	A	Applicable to disposition of waste in a NMSWLF with concentrations of PCBs greater than 50 ppm.
"Decontamination Standards and Procedures: Decontamination Solvents," 40 CFR 761.79(d)	A	Applicable to decontamination of equipment used to manage PCB-contaminated waste, if PCB waste is generated.
"Decontamination Standards and Procedures: Limitation of Exposure and Control of Releases," 40 CFR 761.79(e)	A	Applicable to decontamination activities of equipment with PCB-contaminated waste, if decontamination is performed.

Table 4. (continued).

Requirement (Citation)	ARAR Type	Comments
"Decontamination Standards and Procedures: Decontamination Waste and Residues," 40 CFR 761.79(g)	A	Applicable to management of decontaminated waste and residuals from PCB-contaminated equipment, if PCB waste is generated.
Solid Waste Management Rules		
IDAPA Solid Waste Management Rules for Tier II Landfills	A	Applicable to operation and management of TAN Demolition Landfill.
To-be-Considered Requirements		
"Radiation Protection of the Public and the Environment," DOE Order 5400.5, Chapter II(1)(a,b)	TBC	Applies. Substantive design and construction requirements would be met to keep public exposures as low as reasonably achievable.
"Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities," May 3, 1999 (EPA 1999)	TBC	Applies to residual waste following completion of the removal action.

A = applicable requirement; R = relevant and appropriate requirement
ARAR = applicable or relevant and appropriate requirement
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CFR = Code of Federal Regulations
DOE = U.S. Department of Energy
EPA = U.S. Environmental Protection Agency
ICDF = INEEL CERCLA Disposal Facility
IDAPA = Idaho Administrative Procedures Act
NMSWLF= Non-Municipal Solid Waste Landfill
PCB = polychlorinated biphenyl
RCRA = Resource Conservation and Recovery Act
TBC = to be considered
TSCA = Toxic Substances Control Act

5. PROJECT SCHEDULE

This removal action is expected to begin in fiscal year 2006 with anticipated completion by October 1, 2007. These are baseline dates and the project will continue to look for opportunities to safely accelerate work where appropriate to perform more efficiently. Current working schedule reflects an approximate 6-month acceleration of completion date. A schedule for the removal action is provided in Table 5.

Table 5. Schedule for the removal action.

Activities	Completion Date
Remove roof and borated water tank from TAN-650	6/28/06
Complete TAN-650 above grade demolition	6/11/07
Complete TAN-630/650 single story structure and below grade demolition	9/27/07
Complete TAN-650 containment vessel demolition	10/1/07

6. PROJECT COST

The cost of the selected alternative (Alternative 2) takes into consideration capital outlay, and resource allocation. The cost estimate associated with the selected alternative are summarized and shown in Table 6. These costs have taken into consideration direct capital costs, and indirect capital costs.

Table 6. Cost Estimates for Alternatives.

Cost Description	Alternative 2
Decommissioning Planning	$5,623,709
Containment Building Decommissioning	$8,137,951
TAN-650 Decommissioning	$6,202,285
TAN-630 Decommissioning	$1,754,957
Continued Surveillance and Monitoring Until 2095 (Quarterly)	Not Applicable
TOTAL	$21,718,902

The above cited cost estimate is based upon performing the work associated with the proposed actions over the next two calendar years. Cost associated with Alternative 2 is straightforward. The DOE-ID is responsible for removal action costs and the funds are available to implement the action. The project cost estimate is available in the Administrative Record for the Engineering Evaluation/Cost Analysis (EE/CA) for Decommissioning of TAN-630 and TAN-650 at the Loss-of-Fluid (LOFT) Area for this action.

7. EXPECTED CHANGE SHOULD ACTION BE DELAYED OR NOT TAKEN

The expected change to the decommissioning of TAN-630 and TAN-650, should action be delayed or no action taken would be that the facility would remain as it is today. However, because the facility would continue to age, the potential that water and other contaminated material will be released to the subsurface will increase with time. If the action is not taken at this time, greater surveillance and maintenance costs would be incurred during the time interval before final decommissioning activities can be performed.

8. STATUTORY AND REGULATORY AUTHORITY

The proposed removal action is being undertaken by the DOE-ID, as lead agency, pursuant to CERCLA Section 104 (a), Executive Order 12580, as recognized by Section 5.3 the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (DOE-ID 1991). In accordance with 40 CFR 300.415(j) and DOE guidance, on-Site removal actions conducted under CERCLA are required to meet ARARs to the extent practicable considering the exigencies of the situation. The DOE-ID will comply with the ARARs and "to-be-considered" guidance as set forth in Section 4.4.

9. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues.

10. ENFORCEMENT

The DOE-ID is conducting this removal action as the lead agency under the authority of 40 CFR 300.5, "Definitions," and 40 CFR 300.415 (b)(1), "Removal Action."

11. RECOMMENDATION

This decision document represents the selected removal action for TAN-630 and TAN-650 at The Loss-of-Fluid Test Area, developed in accordance with CERCLA as amended, and not inconsistent with the NCP. Conditions at this site meet the NCP section 300.415(b)(2) criteria for a removal action. This decision is based on the administrative record for the Site.

Conditions at this site meet the NCP section 300.415(b)(2) criteria for a removal and I recommend your approval of the proposed removal action.

The recommended action is to perform Alternative 2. The recommended alternative meets the proposed removal action objectives regarding long-term risk, minimizes short-term worker risk and radiation exposure, is cost effective, and provides a safe and stable configuration that is environmentally sound. The DOE-ID also considers Alternative 2 consistent with the remedial action objectives of the Final Record of Decision for Test Area North, Operable Unit 1-10 (DOE-ID 10682) and compliant with ARARs.

12. REFERENCES

1995 Spent Nuclear Fuel & Idaho National Engineering Laboratory Final Environmental Impact Statement

Burns, D. 2005, Streamlined Risk Assessment. November 11, 2005.

Comprehensive Remedial Investigation/Feasibility Study for the Test Area North Operable Unit 1-10 at the Idaho National Engineering and Environmental Laboratory (DOE/ID-10557) (RI/FS).

DOE-ID, 2003, Composite Analysis for the INEEL CERCLA Disposal Facility Landfill, DOE/ID-10979, Rev. 0, U.S. Department of Energy Idaho Operations Office, August 2003.

EDF-6355, LOFT Characterization Study, December 5, 2005.

EPA Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act (DOE and EPA 1995).

Final Record of Decision, Test Area North, Operable Unit 1-10 (DOE/ID-10682) (ROD).

Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA (EPA 1993).

Kroupa, P.C. 1995, Long-Term Land Use Future Scenarios For The Idaho National Engineering Laboratory (INEL) (DOE/ID-10440).

Thorne, D. 2005, Engineering Design File Groundwater Assessment for the LOFT Imbedded Piping and Sumps, TAN 630 and 650, Using GWSCREEN Version 2.5, November 10, 2005.

Appendix A

Responses to Significant Comments on the Loss of Fluid Test Facility Decommissioning

Appendix A

Responses to Significant Comments on the Loss of Fluid Test Facility Decommissioning

Comment No.	Comment/Issue	Resolution
1	**INL Citizens Advisory Board** I have (finally!) read the LOFT EE/CA and Alternative 2 seems like a good choice. I have one question that I have not heard addressed. In section 5.1.2 (page 21), DOE states that a protective cover would be constructed and that it would remain "in perpetuity" with no surveillance, monitoring, or maintenance ever needed. I thought that CERCLA needed 5-year reviews until it is determined that there is no longer a hazard. If the contamination would already be below hazardous levels why is there a need for the cover? If there is a need for a cover, why is there no CERCLA review and no monitoring and surveillance? The committee is considering whether to deal with this in our draft letter and would appreciate an explanation. Regards, David Kipping	*Thank you for your comment. The purpose of the cover is to provide a deterrent to intrusion on or into the former LOFT area, and to provide additional end-state protectiveness of human health and the environment. A risk analysis was done on the residual subsurface (contained in embedded piping and sumps) contamination that would remain following Alternative 2. The risk analysis showed that even without the cover, no unacceptable risk will remain at the LOFT site upon completion of the final decommissioning. Even though no unacceptable risk would remain without the end-state cover, it is a low-cost, best management practice for this action. Additionally, neither long-term monitoring nor maintenance of the cover is necessary in order to achieve end state results. The area will remain subject to the 5-year reviews under CERCLA to ensure that the remedy remains protective*
2	Citizens Advisory Board One area not reader friendly is the information provided about remaining radionuclide inventories. Comparing total activity levels of curies in 2005 with those in 2095 does not give the general public a clear understanding of the situation. Using an everyday experience to relate the risk from the remaining radionuclide inventories would clarify the actual risk factor for the average person. One example the Committee suggests is comparing the radiation received in a dental procedure or medical imaging procedure to the end-state curies at the project site.	*Thank you for your comment. There are many variables in correlating total curies to an estimated dose rate. The curies in the LOFT facility are a cumulative of several radioactive isotopes with Cs-137 being 87% of the total curie content. During the ongoing decontamination phase at the LOFT facility, removal of contaminated areas will continue. With the implementation of the preferred alternative, it is calculated the dose rate will be approximately .008 to .01 mR/h at the end of the Institutional Control period. This is within the range of background levels. As a comparison, a simple medical imaging such as a chest x-ray will result in approximately 2mR. See Section 3.1.1 for additional text on comparisons.*

Comment No.	Comment/Issue	Resolution
3	Citizens Advisory Board Because of the history of continuing issues with waste management on the INL site, it would be beneficial if documents such as this EE/CA contained clear, unambiguous paths forward for waste generated by the proposed project. Chapters 6.2 – 6.4 do not give the reader adequate confidence that there will be a final repository/venue available for the generated waste. While the committee recognizes the Waste Acceptance Criteria (WAC's) are not "set in stone", that technological advances change how things are done, and that factors beyond the control of the Department of Energy (DOE) may come into play, the Committee suggests that those areas of this EE/CA dealing with the disposition of waste be clarified.	*The Section 6.2 of the LOFT EE/CA states: "It is anticipated that waste generated during decommissioning activities associated with implementation of the selected alternative will meet the waste acceptance criteria for either the TAN Demolition Landfill or ICDF Landfill. Any waste generated that does not meet the waste acceptance criteria of these INL site facilities will be staged and stored for disposal at an off-site facility, subject to meeting its waste acceptance criteria."* *Knowing that we have disposal pathways for construction and demolition debris (TAN Landfill) and CERCLA waste (ICDF), the pathway is unambiguous and clear. If the possibility occurred that a waste stream was identified that did not meet the WAC for TAN Landfill or ICDF, an off-site repository would be identified. Knowing the source term for the LOFT facility, it is not anticipated that this would occur. No change to the document.*
4	Citizens Advisory Board The End State Committee appreciates the willingness of Jim Cooper and Mark Shaw to provide information and answers to the questions. We recognize and appreciate the importance of on-going discussions. It should be noted this letter does not constitute a consensus based recommendation from the full CAB, but rather a Committee generated response to a document assigned to it by the full Board. The Public Comment period for this document ends on February 20, 2006. The next scheduled CAB meeting is not until the third week in March, thus it would be quite difficult for the full Board to generate a consensus recommendation to this EE/CA. As the CAB instrument of choice for comment is the recommendation supported by full Board consensus, it would be most helpful if the Public Comment period for future documents include consideration of the CAB meeting cycle.	*The CAB schedule will be considered and accommodated to the extent practicable. No change to the document.*

Comment No.	Comment/Issue	Resolution
5	Thomas Hill Idaho Falls, ID Significant effort has been placed into stabilizing the Contained Test Facility (TAN 650) and the attached buildings as well as the subsurface hazards surrounding the facility. This effort is commendable in that it has resulted in a minimal cost (several thousand dollars per year) to maintain these facilities for 10 to 20 years while potential future missions continue to be explored. Based on DOE's historical short-term planning horizon, it was not unexpected that potential futures missions were not identified by DOE. This seems inconsistent with the number of proposals that have been made to use this facility for testing nuclear systems for various future missions. While none of these proposed uses for the Contained Test Facility have come to fruition, it nevertheless remains baseline facility for future testing. Based on the three alternatives proposed by DOE, a logical decision would be to maintain TAN-650 in a cold, standby condition until either a test program is defined or a new test facility is constructed that would perform the same function as proposed by CTF, particularly for nuclear system testing. The real value of the CTF is estimated to be between 60 and 80 million dollars, a value that DOE has been reluctant to consider when proposing new test programs and test facilities. A twenty year monitoring program for the CTF would cost less than $100,000 which would be a reasonable return on investment if CTF is used for a future test program. If not, the $100,000 would not be a significant percentage of the $20,000,000 plus proposed for demolition. DOE should consider potential future use for the CTF, even though no current programs have been defined for the facility. Thus Alternative 3 should be the recommended action. The extension of Alternative 3 out to 2095 is unreasonable and appears to be proposed to support the prejudiced DOE decision to proceed with Alternative 2. Again, Alternative 3 should be given serious consideration due to the low cost of investment and the potential for future use of the facility.	*Thank you for your comment. Please see the response to comment #6 in order to satisfy your comment. No change to the document.*

Comment No.	Comment/Issue	Resolution
6	Stanley K. Borowski, Ph.D. NASA Glenn Research Center Nuclear Systems and Technology Office Dear Mr. Shaw: I am writing you in regards to DOE's plans to dismantle the LOFT containment building at Test Area North (TAN) as part of DOE's Idaho CleanUp Project (see e-mail below). Individuals from the INL, DOE/NE-50, NASA/HQ, and the NASA Glenn Research Center (GRC) have had frequent discussions in the past about the potential benefit of using the LOFT containment building, also referred to as the "Contained Test Facility" (CTF), for testing future nuclear space power and propulsion systems. NASA/GRC has been studying the benefits of small Nuclear Thermal Propulsion (NTP) engines for future NASA missions and they are considerable. As you are undoubtedly aware, ground test facilities are a key cost component of developing nuclear systems and we believe that small NTP engines will help keep the overall development costs of such systems to reasonable values. The location of the LOFT/CTF is particularly attractive because it is within ~1 mile of the operational hot cells at TAN. During the development and testing of nuclear rocket engines during the joint NASA/DOE Rover /NERVA (Nuclear Engine for Rocket vehicle Applications) programs (~1955-1973), the DOE and NASA had similar facilities located at the Nuclear Rocket Development Station (NRDS) at the Nevada Test Site. These facilities are no longer available and it is also no longer possible to perform open air testing as was done back then. Today's plans for NTP testing involve the processing of hydrogen exhaust gases from a NTP engine using an effluent treatment system (ETS), filtering out any solid or gaseous fission products that may escape in the engine's exhaust and then burning the clean hydrogen in a flare stack. Because the size of the ETS scales with the amount of hydrogen exiting the engine's nozzle, the smaller the engine thrust level the smaller the size of the ETS components which subsequently makes it possible to place the entire NTP test article along with its ETS components within the CTF during testing. The NTP engine could be assembled at the TAN hot cells, delivered to the CTF via the automated	*Thank you for your comment. The Long-Term Land Use Future Scenarios for the Idaho National Laboratory (DOE/ID-10440, 1995) was the basis for future land use planning assumptions used in the OU 1-10 ROD, and for risk analysis scenarios. Test Area North is assumed to remain under government control, and available for industrial use, through at least the year 2095. While there has been an interest from various non-DOE governmental agencies in utilization LOFT/CTF for future missions, there has been no funding source to support the interest.* *As part of the process for readying a facility for demolition, a process called deactivation and decommissioning is performed. During this process, hazards are removed from the facility and the facility is permanently isolated (usually via air-gapping) from the site utility systems (electrical, water, sewage, air, etc). Piping and components are stripped from the facility which contributes to assist in any hazard removal. This effectively makes the facility unusable for future use without major monetary investment. At LOFT, these actions have taken place already. The facility would require major renovations to be used for any future mission. "Cold, dark, and dry" means that the facility is in a minimum surveillance state that is protective of the public and the environment. It does not mean the facility or its systems could likely be used again. Additionally, the train system is no longer available. Tracks have been pulled and the shielded locomotive is not operational* *The Office of Radioactive Waste Management has evaluated TAN-607 for future use and determined that the liabilities and surveillance and maintenance costs were too high to take ownership.* *No change to the document.*

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	train system which still exists and then the radioactive test article could be remotely returned to the hot cells for PIE and subsequent packaging for disposal. The CTF and TAN hot cells represent a huge investment asset that the country cannot afford to lose. I understand that the Office of Radioactive Waste Management will be assuming responsibility for the TAN-607 facility for use in training spent nuclear fuel handlers so this facility will be preserved. It is important that NASA and DOE fully discuss the benefits of preserving the the CTF/LOFT facility as well so that our country does not dismantle a key infrastructure element vital to this country's future nuclear propulsion and power aspirations. I would appreciate the opportunity to discuss this issue further with you in the future. Thank you for your time and attention.	
7	DJ Kenoyer Idaho Falls, ID G1- EE/CA does not address what will be done with the TAN-630 Transfer Tunnels from the Control Building into the SMC Area (TAN-629 SMC Assembly Building). Will these tunnels be sealed at the Control Building boundary or reconfigured for Emergency Egress from the SMC Area?	*Thank you for your comments. Tunnels will be sealed at the Control Building Boundary as agreed upon with SMC Management. No change to the document.*
8	G2 – EE/CA does not address what will be done with the TAN-630/650 and SMC common and/or shared utility systems {IF any of these systems still exist} [Electrical Power, Fire Protection, Water, Waste Water, etc.]?	*There are no shared systems or utilities with SMC and TAN-630/650. No change to the documents.*
9	DJ Kenoyer Idaho Falls, ID G3- EE/CA does not Reference the Actual Cost Estimate that was prepared in support of this EE/CA. Will this document be made available for Public Review also?	*The complete cost estimate has been reviewed and approved by CWI and DOE personnel, since it contains company sensitive information it will not be made available for Public Review. No change to the document.*

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10	DJ Kenoyer Idaho Falls, ID G4-EE/CA does not address the "Other Affected Facilities" associated with the TAN-630/-650 Decommissioning Project. Many of these are smaller ancillary facilities and structures directly attached to these facilities and/or in the immediate area: • TAN-624 – Railroad Enclosure (attached to TAN-650) • TAN-631 – Tank Building • TAN-637 – Compressor Building • TAN-651 – Heat Stress Relief Building • TAN-657 – Heat Stress Control Building • TAN-659 – Control Building • TAN-703 – • TAN-716 – • TAN-744 – • TAN-745 – • TAN-746 –	*The following facilities and structures are not addressed in the LOFT EE/CA because they no longer exist. These LOFT support facilities are listed with their dates of demolition.* *TAN-624: 12.14.04* *TAN-631: 6.08.04* *TAN-637: 5.20.04* *TAN-651: 12.02.03* *TAN-657: 12.02.03* *TAN-659: 12.06.04* *TAN-703: 9.30.04* *TAN-716: 9.30.04* *TAN-744: 5.01.04* *TAN-745: 9.30.04* *TAN-746: 9.21.04* *No change to the document.*
11	DJ Kenoyer Idaho Falls, ID S1-Executive Summary, pages iii-iv ==> Does NOT address the specific level of radiological contamination removal to be accomplished. • Alternative 1 – "… removal of radiological contamination, …" Does this mean ALL radiological contamination requiring 1) removal of ALL "loose contamination" requiring HEPA vacuuming and wet wiping, 2) removal of all "fixed contamination" requiring the scabbling of surfaces and/or saw cutting and removal of concrete or steel • Alternative 2 – Does not address radiological contamination removal at all. Assume this to mean that ALL "Loose Contamination" is removed and ALL "Fixed Contamination" is sealed in place prior to capping or grouting Section 4 does not address this radiological contamination removal issue either. S2a – Section 2.2 – Previous Closure / Cleanup Activities at TAN-630 and TAN-650, page 6 ==> States in part "… many buildings and structures have been decommissioned and	*For Alternative 1, ALL means everything will be removed from the ground that is defined in Section 4.1 of the EE/CA.* *4.1 Alternative 1* *The Alternative 1 approach removes above ground components and structures, collapses and removes floors and concrete walls to 3 feet below grade, and removes sump liners, sumps, and piping (including embedded piping). Radiological contamination would be removed. The remaining shell would then be filled to grade with solid inert material (e.g., clean soil, concrete). The specific components of Alternative 1 are as follows:* • *TAN-630* - *Remove equipment, ducting, and piping* - *Remove any fixed contamination or contaminated piping* - *Collapse upper floor and remove material*

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	demolished at the TSF (e.g. TAN-615, TAN-616, etc.) and at LOFT (e.g. TAN-726, TAN-725, etc.)" Why is there any reference to TSF (Technical Support Facility) area buildings … this area is over 1/2 mile away from LOFT area? • TAN-615 Maintenance Building (no radiological contamination) • TAN-616 Liquid Waste Treatment Facility [down stream from V-Tanks, processed waste and sent liquid waste to associated PM2A Tanks] (high radiological contamination)	- *Collapse concrete walls to 3 feet below grade.* - *Fill shell containing collapsed concrete to grade with solid inert material and contour to surroundings.* - *Install boundary at isolation point between SMC and LOFT.* • *TAN-650 Upper and Lower Containment Building* - *Remove above ground structures and components* - *Remove containment building exterior concrete walls to 3 feet below grade* - *Remove containment building welded-steel walls to 3 feet below grade* - *Remove upper containment concrete floor* - *Remove sump liners, sumps, and piping (including embedded piping)* - *Fill to grade with solid inert material and contour to surroundings.* • *TAN-650 Miscellaneous (remainder of TAN-650, excludes Upper and Lower Containment Building)* - *Remove equipment, ducting, and piping (including embedded piping)* - *Remove above-ground structures and components* - *Collapse concrete walls to 3 feet below grade* - *Collapse floors* - *Fill shell containing collapsed concrete to grade with solid inert material and contour to surroundings.*

Comment No.	Comment/Issue	Resolution
		Alternative 2 is leaving the fixed contamination in the sumps and pipes in place and will be filled/capped and covered with long-term viable cover. All loose contamination has been removed from the LOFT during previous cleanup activities. *The reference to the cleanup and DD&D activities is to inform the reader of where the majority of the work has been conducted on the cleanup and closure of the facilities at the Test Area North*
12	DJ Kenoyer Idaho Falls, ID S2b-Section 2.2 – Previous Closure / Cleanup Activities at TAN-630 and TAN-650, page 6 ==> Need to state what TAN-725 and TAN-726 were when referenced since the public does not know what these structures are and/or how they relate to the TAN-630 and TAN-650 Project. What about the Access Tunnel for TAN-630 / -650 that was demolished during/prior to the removal of the stack structure [the Access Tunnel and LOFT Exhaust Stack have common structural elements]? • TAN-725 – LOFT Exhaust Stack? • TAN-726 – Waste Storage Facility?	*TAN-725 Exhaust Stack and the TAN-726 Waste Storage Facility, these structures have been removed.* *LOFT access tunnel and the structural base of the stack have been removed through a prior demolition project; there are no common structural elements. No change to the document.*
13	DJ Kenoyer Idaho Falls, ID S3-Section 2.2.1 – CERCLA Activities, page 6 ==> ALL address TAN/TSF area work and does not involve CERCLA activities in the LOFT area. Why are these addressed here?	*TAN/TSF and LOFT are all part of the same DD&D project. Discussion of the work scope at TAN/TSF gives the reader an idea of the magnitude of the project. No change to the document.*
14	DJ Kenoyer Idaho Falls, ID S4-Section 2.2.2 – Voluntary Consent Order Activities, pages 6-7 ==> Sites the *SITE-TANK-05 Action Plan of the Voluntary Consent Order (VCO)*. Does this plan address what is to be done with the three 110,000 gallon underground fuel storage tanks associated with TAN-630 that were previously emptied and backfilled with sand-gout to be RCRA compliant as "Empty U/G Tanks"? These tanks (TAN-666, -667A, -667B are approximately 6 feet underground located to the South and are partially under the TAN-630 facility [Emergency Power Generation Room]).	*The tanks you are referring to are TAN-767A, TAN-767B, and TAN-766. TAN-767A and TAN-767B were removed under the VCO program and properly abandoned under the 40 CFR 280 regulations for underground storage tanks. These tanks and their ancillary systems were sampled, cleaned, and filled with a solid inert material (grout material) as per the regulations in November 2005. TAN-766 was not a VCO tank (exempt as a heating oil UST) and was properly abandoned under the 40 CFR 280 regulations in 1998 and filled with grout. Text added to Section 2.2.*

Comment No.	Comment/Issue	Resolution
15	S5 – Section 2.4.2 – Remaining Nonradionuclide Inventory, page 12 ==> States in part "… painted surfaces that could potentially contain PCBs over 50 ppm will be removed and sent to the TAN Demolition Landfill … in accordance with 40 CFR 761.62(b)(1)." This implies that the *LOFT Characterization Study*, EDF-6355, December 5, 2005 did not specifically sample for and/or determine the extent of these potential painted surfaces containing PCBs over 50 ppm. When will this PCB contaminated paint removal work be accomplished [assumed prior to start of demolition activities]?	*The painted surfaces in question are classified as Bulk Product Waste [as per 40 CFR 761.62(b)(1)]. Since the regulations address these painted surfaces as bulk product, they may be disposed of in a State permitted Non-Municipal Solid Waste Landfill, such as the Tan Demolition Landfill. Specific characterization is not required since the sited regulations allow disposal of any concentration of any PCB in the paint (dried applied surfaces. No change to the document.*
16	DJ Kenoyer Idaho Falls, ID S6-Section 2.4.2 – Remaining Nonradionuclide Inventory, page 12 ==> States in part "… TAN-630 control room equipment will be removed and properly disposed of in accordance with the schedule." What schedule is this in reference to? Assume this is the *Waste Disposition Schedule* that is part of the *Detailed DD&D Plan*?	*The TAN-630 Control Room equipment has been removed and properly dispositioned. This has been accomplished according to the DOE approved Life Cycle Baseline detailed schedule. No change to the document.*
17	DJ Kenoyer Idaho Falls, ID S7-Section 4.2 – Alternative 2, pages 16-17 ==> References the "Long-Term Viable Cover (e.g., native soils)". Has this *Long-Term Viable Cover* been through Engineering and Design Development yet? It is assumed that this cover will be similar to other previously DOE and DEQ approved Engineered Native Soil covers that have been installed at the INL for other CERCLA Closure Projects. If this cover design has been approved then a reference to such should be made.	*Final engineering design has not been completed to determine exact field specifications. Native, low permeability, material at an appropriate thickness and density will be used. The slopes for run-off and amount of protective rock armor will be detailed in the final engineering design. No change to the document.*

Comment No.	Comment/Issue	Resolution
18	DJ Kenoyer Idaho Falls, ID S8-Section 4.2 – Alternative 2, pages 16-17 ==> States in part "… will be backfilled with site soils and compacted by processor head and track walking by equipment as feasible." This does not meet the intent of most compaction requirement documentation that requires a specific "Engineered Fill Material" of specified gradation be utilized and material is to be placed in lifts of certain height and compacted to a specific "Percentage Compaction at Optimum Moisture" {typically 85%-90% Compaction at Optimum Moisture is required for general backfill areas}. This is usually accomplished with stated hydraulic impact plate processor attachment and/or use of a vibratory sheeps-foot roller {track walking is typically not allowed as an approved compaction technique}.	*As stated in Section 4.2, "The adjacent areas of TAN-630 and TAN-650 that are demolished to 3 feet below grade will be backfilled with site soils and compacted by processor head and track walking by equipment as feasible. These areas are not under the "long term viable cover" but will be compacted with proper moisture addition to minimize subsidence and safely support equipment and vehicle traffic for the demolition of the containment dome." The backfill is not designated as Engineered Fill Material as these areas will not support future structures or slabs. The constrained basement areas are not conducive to compaction with a sheep's-foot roller. The areas can be properly backfilled and compacted in lifts to the desired density and moisture content with the equipment noted. The materials to be used are well characterized, moisture will be added as necessary with the backfilling supervised by an Idaho Licensed Professional Civil Engineer specializing in Geotechnical Engineering. Track walking is acceptable and currently being used to compact waste at ICDF with the desired density being achieved with a correlation to number of passes. Special areas for interim crane pads or access ramps will be specifically designed by the PE as necessary. No change to the document.*
19	DJ Kenoyer Idaho Falls, ID S9-Section 4.2 – Alternative 2, page 17 ==> References the "solid inert material". What is this material to be [It is assumed that this would be some *cement grout material* that would allow pumping into lower structures and would tend to naturally fill voids by gravity driven displacement of air]?	*Actual designs have not been finalized, however, a self leveling cement grout material is currently being considered for use. As stated in Section 4.2, we will be using a solid inert material to fill the sumps, lower containment, and the annulus. It has not been determined as yet what that material will be. No change to the document.*
20	DJ Kenoyer Idaho Falls, ID S9-Section 4.2 – Alternative 2, page 17 ==> References the "cut-off and cap appropriate pipe penetrations" work to be accomplished. Does this include the filling of these pipes with a cement grout material similar to the ICPP Waste Calciner Facility DD&D Project?	*No, the pipes will be capped but not filled. No change to the document.*

Comment No.	Comment/Issue	Resolution
21	DJ Kenoyer Idaho Falls, ID S10-Section 5.1.1 – Protectiveness of Public Health and the Environment, page 19, 3rd paragraph, Excavations ==> States in part "… excavation activities necessary to facilitate this alternative will place employees at an increased risk to cave-in/inundation by soils and other loosely unconsolidated materials associated with this undertaking … and further stated … additionally, the excavation and handling of excavated materials (cubic yards of soil/material) would be significant due to the requirement to ascertain/maintain an angle of repose (side slope of excavation) to a maximum of 34 degrees from horizontal." These are not legitimate reasons for not performing work. OSHA has specific guidance for "Excavation Shoring" and the INL has specific Excavation and Shoring MCPs in place to allow for deep excavations utilizing appropriate shoring techniques. Shoring is more expensive than open or sloped excavations but provides for less material to be excavated and assure worker safety.	*It is technologically possible to provide shoring and other protective means for employees engaged in deep excavation work. However, from a Human Performance perspective, exposing employees to lengthy periods of time on a potentially hazardous project increases the likelihood of sustaining an error likely situation –resulting in physical harm or death. Other viable options are available which do not place employees at this same degree of risk and therefore recommend that other options be pursued. No change to the document.*
22	DJ Kenoyer Idaho Falls, ID S11-Section 5.1.1 – Protectiveness of Public Health and the Environment, page 19, 3rd paragraph, Demolition ==> States in part "… the use of the hydraulic processor shear and (impact) hammer would be reasonably anticipated as a significant "tool" in performing demolition activities associated with this alternative." What is the specific DD&D Technical Approach for the Demolition of the TAN-650 Containment Structure? • Utilize Outside Commercial DD&D Contractor that has specialized DD&D Equipment • Utilize Outside Commercial Implosion Contractor that has specialized expertise {TAN-725 LOFT Exhaust Stack was demolished utilizing an Implosion Contractor} • Utilizing existing INL DD&D Equipment would require extensive earth ramp configuration to allow equipment access	*The specific technical approach has not been determined. The TAN-650 Containment Structure Demolition will be subcontracted via RFP. The potential subcontractors are expected to fall within those described in the first two bullets. The proposals by the bidding subcontractors will be evaluated by: experience, key personnel, technical approach, schedule, safety record, and cost to determine the best value for contract award. No change to the document.* *The cost estimate was done assuming a conservative, more labor intensive method with a subcontractor specializing in traditional, DD&D methods. No change to the document.*

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	{limited height access for tracked crawler excavators with hydraulic processing attachments} • Utilize additional "Remote Equipment" that specialize in this type of application {WOPPS Reactor Containment Structures were demolished utilizing BROKK equipment that worked from the top down} Without Stating or Knowing the preferred DD&D Technique to accomplish this work … How was the Cost Estimate done?	
23	DJ Kenoyer Idaho Falls, ID S12 – Section 5.1.2 – Ability to Achieve Non-Time Critical Removal Action Objectives, page 21 ==> States in part "… continued surveillance and monitoring would be unnecessary, and control would be maintained without the need to seek an alternative long-term solution." This is NOT correct. Even a *Long-Term Viable Cover* requires some surveillance and maintenance to assure fences are in place and surface structure has not been significantly disturbed by weather events as required by the S&M Schedule for said Remediation Plan (Yearly, Quarterly, etc.).	Surveillance and maintenance are terms used to monitor facilities that are left in a "cold, dark, and dry" condition (please see Section 4.3.3). The resulting long term viable cover is subject to the Five-Year Review during the Institutional Control period (until the year 2095) when the risk is projected to be less than 1.0E-06. These "inspections" are very different than the type of surveillance and maintenance activities required to keep a facility in a "cold, dark, and dry" condition. No change to the document.

Comment No.	Comment/Issue	Resolution
24	DJ Kenoyer Idaho Falls, ID S13-Section 5.1.3 – Technical Feasibility, page 21 ==> States in part "… with the excavation being 1.5 times as wide as it is deep in order to meet OSHA requirements for excavations." This again is NOT the only option for excavation presented by OSHA [See comment S10 above]. OSHA provides many options including *Shoring* for deeper excavations, whereas the referenced 1.5 times as wide as it is deep reference is for *Non-Shored Excavations*. Deep Excavations [over 45 feet in depth are common in the industry with many being as deep as 15-stories deep for skyscrapers foundations, etc.] are technically feasible and are accomplished safely routinely in the construction industry.	*Please refer to the comment #21 resolution.*
25	DJ Kenoyer Idaho Falls, ID S14-Section 5.3 - Cost of the Alternatives, *Table 5. Cost Estimates for Alternatives*, page 23 ==> It is assumed that the second line labeled "Containment Building Decommissioning" means the below grade structures of the Containment Building, TAN-650 and the third line labeled "TAN-650 Decommissioning" means the above grade structures of the Containment Building, TAN-650. The delta in cost from the "Total Removal" to "Partial Entombment" is approximately 50% which is the typical value applied to Entombment Options with the INL DD&D Parametric Model and is reflected in INL DD&D Historical Data.	*The second line in the Table 5 Cost Estimate, "Containment Building Decommissioning", refers to the above and below grade containment building structures (see Section 4.2, Alternative 2, 2nd bullet).* *The fourth line of the Table 5 Cost Estimate, "TAN-650 Decommissioning", refers to the TAN-650 structures other than the containment building (see Section 4.2, Alternative 2, 3rd bullet). No change to the document.*
26	DJ Kenoyer Idaho Falls, ID S15-Section 5.3 - Cost of the Alternatives, *Table 5. Cost Estimates for Alternatives*, page 23 ==> The fifth line labeled "Continued Surveillance and Monitoring until 2095 (Quarterly)" has Not Applicable as a cost element. As stated in comment S12 above and indicated by your label (Quarterly), there are in fact Surveillance and Monitoring Costs associated with this Alternative.	*There are no S&M cost associated with Alternative 1 and Alternative 2. Alternative 1 is complete removal of all radioactive constituents, while Alternative 2 allows the site to be left in a stable and safe configuration for the Institutional Control period (2095). By the end of the DOE Institutional Control period, the risk will be less than 1.0E-06. No change to the document.*

Comment No.	Comment/Issue	Resolution
27	DJ Kenoyer Idaho Falls, ID S16-Section 5.3 - Cost of the Alternatives, *Table 5. Cost Estimates for Alternatives*, page 23 ==> There is NO Reference to the *Long-Term Viable Cover* that is to be installed as part of this Alternative. This Cost should be included in this Alternative 2.	*The cost for the Long Term Viable Cover is included in the Containment Building Decommissioning line item in Alternative 2. No change to the document.*
28	S17 – Section 6.1.1 – CERCLA, fourth bullet, page 26 ==> States in part "… Asbestos-containing material may be encountered incidental to performance of the NTCRA." What is the NTCRA, this term is not listed under the *Acronyms* subsection and is not previously described? Unless ALL Asbestos-containing materials (ACM) are removed during the previously referenced ongoing remediation activities at TAN-630/-650, then it is certain that ACM will be encountered.	*The "NTCRA" is the Non-Time Critical Removal Action.* *It is not certain that ACM will be encountered. The LOFT facility contains many levels of pipe runs, wire runs, etc. As these materials are removed, there is the potential to encounter small quantities of ACM such as insulation on pipe hangers, wall penetrations, etc. These will be removed through proper asbestos abatement procedures as they are encountered. "NTCRA" has been included to the acronym list..*
29	S18 – Section 6.1.2 – Voluntary Consent Order, second bullet, page 30 ==> Does the Boiler Fuel Oil System to be closed under 40CFR Part 280 UST requirements include additional underground storage tanks (USTs) that have not been previously listed / referenced [TAN designation numbers]? Additionally, UST (underground storage tanks) is not listed in the *Acronyms* subsection.	*There are no additional underground storage tanks at LOFT.* *"UST"has been included to the acronym list.*
30	DJ Kenoyer Idaho Falls, ID S19-Subsection 6.1.3 – Cultural Resources, second paragraph, page 31 ==> States in part "… However, the Advisory Council declined to participate." What was the reasoning behind this decline by the State/Federal Agency, *Advisory Council* to participate in the Memorandum of Agreement (MOA)? MOA is not listed in the *Acronyms* subsection.	*The Advisory Counsel is invited as a courtesy only. They declined the option to participate and deferred to the State SHPO office for all regulatory affairs on this matter. No change to the document.* *"MOA" has been included to the acronym list.*

Comment No.	Comment/Issue	Resolution
31	Roger Turner Air Quality Manager Shoshone-Bannock Tribes **Background**: The Shoshone-Bannock Tribes (Hereafter "Tribes") are very concerned about the contaminants in the soil and groundwater from past practices at these Test Area North (TAN) facilities. According to Idaho Division of Environmental Quality (IDEQ) the Loss-of-Fluid-Test (LOFT) Facility is expected to contain mercury, depleted uranium, transuranic, and RCRA hazardous constituent contamination. Both TAN facilities have contaminated piping and ducts, sumps, drains, and heavy lifting equipment. The contaminated ground water plume underneath TAN is roughly two miles long. The contaminant is primarily organic cleaning solvents (trichloroethylene), with some radionuclides. These wastes were injected into the Snake River Aquifer during the 1950s, continuing until 1972. These facilities are a part of Waste Area Group (WAG) 1, and the contamination is considerable. Wastes were injected into the Snake River Plain Aquifer, the same aquifer from which the Tribes depend for spring water and groundwater pumping.	*Thank you for your comment. As per the Final Record of Decision for the Test Area North (DOE-ID 1999) operations at the LOFT facility have never attributed to the contamination of the Snake River Plain Aquifer.* *The mercury contamination at the LOFT facility has been remediated through past RCRA Closure actions (HWMA/RCRA Closure Plan Addressing the HTRE-3 Mercury Spill at TAN/CTF (LOFT) (DOE/ID-11097, December 2004, Rev 4). This RCRA closure was completed in April 2005. There has never been any evidence of depleted uranium at the LOFT facility. After thorough characterization and decontamination, there are no transuranics at the LOFT facility. All other RCRA hazardous constituents have been removed during the decontamination process.* *The LOFT facility has contaminated sumps and piping which has been addressed in the LOFT EE/CA. The preferred alternative is protective of human health and the environment. The radioactive isotopes have been calculated to decay to less than 10E-6 cancer risk by the end of the DOE Institutional Control period in 2095.* *There is no contaminated groundwater plume and there is no trichloroethylene (TCE) beneath the LOFT facility as per the Final Record of Decision for the Test Area North (DOE-ID 1999). The TCE plume originates at the Technical Support Facility (TSF) near TAN-607 approximately one mile to the southeast of LOFT. The TCE plume is moving in an east/southeast direction away from the LOFT facility. No change to the document.*
32	Roger Turner Air Quality Manager Shoshone-Bannock Tribes The Tribes are an affected Tribe with respect to DOE EM/Clean-up plans and activities, and should have a role in DOE's planning and implementation process for environmental restoration and waste management. DOE should work closely with the Tribes on a government-to-government basis, as outlined in the	*The DOE will continue to work with the Tribes to ensure Tribal rights and concerns are appropriately considered during the planning phase. Previous CERCLA activities that the Tribes and DOE have worked together on include, (OU 1-10 Record of Decision for the Test Area North, etc.) and non-CERCLA activities (Test Area North Demolition Landfill Cultural Resources Report). No change to the document.*

Comment No.	Comment/Issue	Resolution
	President's Memorandum of April 24, 1994 on Government-to-Government Relations With Native American Tribal Governments (Fed. Reg. Vol. 59, No. 85, May 4, 1994). The responsibility is described:"In carrying out this relationship with the Tribes, the DOE will assess the impact of DOE's plans, projects, programs, activities on tribal trust resources and assure that tribal government rights and concerns are considered during the development of such plans, projects, programs, and activities."	
33	Roger Turner Air Quality Manager Shoshone-Bannock Tribes **Removal Action violates CERCLA -** The purported need to use a Removal option rather than a normal CERCLA-based remedial track was not adequately described. How is it that these facilities (TAN 630 and 650) were both deactivated twenty years ago, and yet DOE claims that now need to carry out a "streamlined" clean-up through a Removal action, rather than a longer, and typically more thorough, CERCLA-based RI/FS remedial process? According to CERCLA: Remedial actions involve the study, design, and construction of long-term actions directed toward permanent remedy. In contrast, removal actions are short-term actions typically taken within hours, weeks, or months to "abate, prevent, minimize, stabilize, mitigate, or eliminate the release or threat of release" [40 CFR 300.415(b)]. Obviously this clean-up is not one that will take "hours, weeks, or months" rather this one that is more accurately describes as "decades", and is clearly not consistent with CERCLA requirements for a "Removal" option. That is, DOE has waited since 1985 --- twenty years since these units were deactivated--- to initiate a "short-cut method" (a"Removal") of clean-up. Indeed many units of the TAN facility were shut down long before that: The Material Test Reactor (MTR), for example, was defueled in 1970; the Engineering Test Reactor (ETR) was shut down in 1981. More specifically, CERCLA and the NCP authorize two types of responses to	*DOE's use of its CERCLA removal action authority is in full compliance with the statute and it's implementing regulation, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, 40 CFR Part 300). As the commenter notes, CERCLA and the NCP authorize two types of response actions: remedial actions and removal actions. The 1995 Joint EPA and DOE Policy on Decommissioning Department of Energy Facilities Under CERCLA (http://www.epa.gov/swerffrr/documents/decommissioning_doe.htm) encourages the use of CERCLA Non-Time Critical Removal Actions for decommissioning DOE facilities. The policy states in part,* *Although the full range of CERCLA response actions may be applicable to decommissioning activities, non-time critical removal actions should be used for decommissioning, consistent with this Policy. The alternative approaches available to conduct decommissioning projects typically are clear and very limited. This often will eliminate the need for the more thorough analysis of alternatives required for remedial actions. Non-time critical removal action requirements provide greater flexibility to develop decommissioning plans that are appropriate for the circumstances presented. Statutory time and dollar limits on removal action do not apply to removal action conducted by DOE, which increases the scope of projects that may be addressed by DOE removal action. Most importantly, non-time critical removal actions usually will*

Comment No.	Comment/Issue	Resolution
	releases of hazardous substances into the environment: remedial and removal actions. According to the Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), it states: "Most importantly, non-time critical removal actions usually will provide benefits to worker safety, public health, and the environment more rapidly and cost effectively than remedial actions" DOE's own CERCLA Brief (*DOE/EH-413-9811 (April 1998))* indicates that Non-Time-Critical Removals are to be used to respond to short-term threat of releases: DOE and the U.S. Environmental Protection Agency (EPA) support the use of non-time-critical (NTC) removal actions to respond quickly to releases or threats of releases. No detailed rational was provided to the Shoshone-Bannock Tribes that compared the benefits of this proposed "streamlined" non-time critical removal to that of DOE taking the traditional CERCLA remedial process, the latter process could have been completed years ago. (While it is true that minor RCRA activities have been carried out over the past few years, there is no reason that the CERCLA process could not have gone forward at the same time. According to DOE's own Non-Time Critical NTC Guidance (DOE/EH-413-9811) removals generally attempt to control the source of contamination and are sometimes followed by a remedial action to complete site response. Why has DOE not offered this type of alternative?	*provide benefits to worker safety, public health, and the environment more rapidly and cost-effectively than remedial actions. For these reasons, DOE may exercise removal action authority to conduct decommissioning whenever such action is authorized by CERCLA, the NCP, and Executive Order 12580.* *The commentor correctly notes that previous deactivation-related activities (such as RCRA closures) have already fulfilled several regulatory requirements and helped to mitigate the environmental threat from the facilities. Surveillance and maintenance (S & M) has been conducted to ensure the facilities and their systems do not deteriorate to an extent that could increase the risk of a release of hazardous substances to the environment. Continuation of the ongoing S & M was evaluated as the No Action Alternative in the EE/CA, and was determined to cost more in the long term than a removal action, which would eliminate the environmental risks from the facilities. Cost savings can then be applied to other much-needed response actions at the INL Site.* *In general, the primary benefit of a longer-term remedial action is that it allows for more detailed and extensive accumulation and analysis of data concerning the nature and extent of a release or threatened release of hazardous substances, and more detailed study of various alternative ways of countering the contamination. Congress enacted the CERCLA statute to emphasize timely cleanup action. Whenever a CERCLA action is needed, there is already a threat to human health and the environment that needs to be addressed, so there is a statutory bias against delaying action through additional paperwork that does not promise to contribute materially to a solution.* *DOE is now ready to proceed with the final decommissioning of the LOFT facility. Conducting the final decommissioning of the LOFT facility as a non-time critical removal action provides an expeditious and cost-effective approach to performing the work,*

Comment No.	Comment/Issue	Resolution
		while providing for stakeholder involvement and addressing residual risk in a manner consistent with the remedial action objectives of the Comprehensive Record of Decision at Test Area North. No change to the document.
34	Roger Turner Air Quality Manager Shoshone-Bannock Tribes Section 5.1.2 indicates that under Alternative 2, a protective cover would be constructed and it would then remain undisturbed for perpetuity. I have several concerns about this: How long is perpetuity?	*Thank you for your comment and please excuse us for the confusion. In this case the term perpetuity can be used to mean the Institutional Control period for the LOFT facility after completion of Alternative 2 as the remedy. At that time (2095), the radioactive isotopes will have decayed to less than 1.0E-06 cancer risk.*
35	Roger Turner Air Quality Manager Shoshone-Bannock Tribes What is the protective cover made of?	*Thank you for your comment on the construction of the cover, it is important to understand if the material used will be protective now and in the future. From Section 4.2 bullets for TAN-650 and Lower Containment Building "Create a long-term viable cover, slope to allow for surface water run-off, cover with several feet of native soils overlain by rock armor sloped accordingly (final engineering design dictates field specifications). From Section 4.2, Alternative 2 "A long-term viable cover (e.g., native soils) will encompass the footprint of the containment dome and the previously filled filter housing room to the east. The annulus voids under this area will be filled with a solid inert material (to be determined) providing a stable long-term foundation for the cover."*
36	Roger Turner Air Quality Manager Shoshone-Bannock Tribes How long is the protective cover expected to last (please provide engineering analyses)?	*Thank you for your insight on this issue, we hope to address your comment appropriately below.* *Final engineering design has not been completed to determine exact field specifications. Native, low permeability, material at an appropriate thickness and density will be used. The slopes for run-off and amount of protective rock armor will be detailed in the final engineering design. The earthen cover design life will easily exceed the duration necessary for decay of contaminants of concern. See Section 2.5.*

Comment No.	Comment/Issue	Resolution
37	Roger Turner Air Quality Manager Shoshone-Bannock Tribes What would be the groundwater impacts, if ground- or surface-water infiltrated the TAN-650, and migrated with the contaminants, under alternative 2 and 3?	*Under alternative 2, TAN-650 Lower Containment Building is filled with a solid inert material (to be determined) and protected by a cover diverting surface water, therefore preventing infiltration and the potential for ground water impacts. Under alternate 3, refer to section 5.1.1*
38	Roger Turner Air Quality Manager Shoshone-Bannock Tribes How is it that DOE, in some cases, refers to the institutional control as "perpetual" and in other cases refers to a date of 2095?	*Thank you for identifying this issue, the term perpetuity is no longer used in the text; this has been replaced with references to 2095.*
39	Roger Turner Air Quality Manager Shoshone-Bannock Tribes **Restoration of INL**: The Tribes support the complete clean-up, both for Radionuclides and RCRA wastes from the entire site at TAN 630 and TAN 650. The Tribes do not believe that DOE is adequately considering the Tribes interest when an alternative is selected as preferred by DOE that not only leaves the waste untreated, but also leaves that area of INL restricted to the Tribes future use until 2095, or later. That is, it is wrong for DOE to leave radioactive contamination in any sumps, piping, sub-structures or soils at these sites. The Shoshone-Bannock Tribes have consistently, over the years, advocated that the DOE at INL, once it's missions are complete at each facility, return the lands to the Department of Interior, whereupon the Tribes may then have unrestricted access to them. This Treaty right cannot ever be provided to the Tribes if DOE decommissions these sites with contamination remaining, and with fences, restrictions, or administrative controls that deny access to the Tribes. To that extent, the Tribes request complete restoration of the TAN 650 and TAN 630, back to their native state. DOE has had twenty years since these facilities have been deactivated –plenty of time to have carried out a completed RCRA and CERCLA clean-up that does not leave unacceptable amounts of waste behind.	*Thank you for your concerns on remedy selection, the DOE is sensitive to the issues concerning the Tribe. But, the preferred alternative is both protective of human health and the environment. There is no known RCRA waste remaining at the LOFT facility, this has all been removed with the last RCRA closure and the decontamination work over the last two years. The sumps and piping that will be fixed in place until 2095 are to remain on DOE owned property and under DOE control. There will be no risk to the public or human health during this Institutional Control period, and at the end of this period, the isotopes will have decayed to less than 1.0E-06 risk.* *Additionally, there is an operating facility directly adjacent to this site, so this land is not available to be released to the public while that facility exists. No change to the document.*

Comment No.	Comment/Issue	Resolution
40	Roger Turner Air Quality Manager Shoshone-Bannock Tribes Given the above backdrop, the DOE should include additional alternatives that: utilize a CERCLA RI/FS-remedial track for clean-up, and compare those risks, and benefits with that of a Removal. Similarly, the DOE should add another alternative, whereby a Removal is initially done, but is then followed by a typical CERCLA Remedial clean-up with a full Remedial Investigation and Feasibility Study. The most obvious deficit in the alternatives is the lack of one that removes all RCRA and CERCLA waste and provides that the TAN sites site be restored.	*Thank you for your comment concerning additional CERCLA actions, we hope the following will clarify this concern.* *The 1995 Joint EPA and DOE Policy on Decommissioning Department of Energy Facilities Under CERCLA (http://www.epa.gov/swerffrr/documents/decommissioning_doe.htm) encourages the use of CERCLA Non-Time Critical Removal Actions for decommissioning DOE facilities. The policy states in part,* *Although the full range of CERCLA response actions may be applicable to decommissioning activities, non-time critical removal actions should be used for decommissioning, consistent with this Policy. The alternative approaches available to conduct decommissioning projects typically are clear and very limited. This often will eliminate the need for the more thorough analysis of alternatives required for remedial actions. Non-time critical removal action requirements provide greater flexibility to develop decommissioning plans that are appropriate for the circumstances presented. Statutory time and dollar limits on removal action do not apply to removal action conducted by DOE, which increases the scope of projects that may be addressed by DOE removal action. Most importantly, non-time critical removal actions usually will provide benefits to worker safety, public health, and the environment more rapidly and cost-effectively than remedial actions. For these reasons, DOE may exercise removal action authority to conduct decommissioning whenever such action is authorized by CERCLA, the NCP, and Executive Order 12580.* *With this in mind, there is no need for any other CERCLA based remedial action to be considered. There are no RCRA hazardous constituents at the LOFT facility. No change to the document.*

Comment No.	Comment/Issue	Resolution
41	Roger Turner Air Quality Manager Shoshone-Bannock Tribes In the alternative analysis, DOE indicates that there will be an increase risk of exposure to workers if Alternative No. 1 is used because of additional exposure to the radiation from removing the piping and sumps. In an other section, however, DOE is quick to point out that all, or nearly all, waste from TAN 630 and 650 can be sent to a landfill. If the material is so benign as to be accepted at a simple landfill, it does seem logical that it will be a significant threat to the workers. But, on the other hand, if it is a significant risk to workers to remove the piping and containment building, why is it sent to a landfill where fugitive dust and erosion can uncover and re-distribute the contamination?	*It is the expressed desire of the DOE to minimize any confusion in how alternatives were developed or selected. Please accept the following resolution in an effort to clarify this issue.* *. In the evaluation of Alternative 1, <u>one</u> of the increased risks to the worker would be from exposure to radioactively contaminated materials while removing the sumps and piping. The greater concern to the worker in Alternative 1 is from industrial hazards associated with large excavations (i.e., fall hazards, overhead loads, heavy equipment used to break up high density reinforced concrete, etc.).* *If Alternative 1 were to be selected, all of the radioactively contaminated waste would go to the ICDF. If Alternative 2 were selected, some radioactive contamination will remain at the LOFT facility. This contamination will decay away to less than 1.0E-06 risk at the end of the DOE Institutional Control period in 2095. The balance of the radioactive waste would go to the ICDF.* *The waste going to the TAN Demolition Landfill will meet the requirements of the Solid Waste Management Rules under IDAPA 58.01.06.012.03.* *Even though the majority of the waste from the LOFT facility (under Alternative 2) would go to the TAN Demolition Landfill, if it does not meet the requirements under IDAPA and the TAN Demolition Landfill Operating Plan, it will either go to the ICDF or an off-site repository. No change to the document.*

Comment No.	Comment/Issue	Resolution
42	Roger Turner Air Quality Manager Shoshone-Bannock Tribes Doe may have made an error that violates CERCLA by limiting the clean-up options to a removal rather than initiating a more thorough RI/FS remedial track, in so far as "Removals" are designed for a short-term threat, while these sites have been deactivated twenty or more years ago, giving ample time to DOE to clean them up under a standard CERCLA remediation schedule. It makes no sense for DOE to wait twenty years and then propose a more stream-lined, quick analyses and clean-up. DOE is selecting as a preferred alternative (No. 2) a clean-up that would leave a contaminated containment structure and piping, rather than completely remediating and restoring the site. None of the alternatives provides a way for the lands at TAN 650 and TAN 630 to be returned to their native state, one that would allow the Shoshone-Bannock Tribes to hunt, fish and travel through, as provided in their Treaty. Clearly, the DOE needs to re-think the alternatives, and provide one or more alternatives that restore these lands and return them to the Department of Interior without radiological contamination remaining, or restrictions, or fencing.	*Please see response to comment #33 for resolution.*
43	Willie Preacher, Director Tribal/DOE Program We have always understood that DOE has maintained that cleaning up the various areas of the site has been a major priority, that they will do the most efficient job on cleaning up areas of the INL. It is our preference during clean up that all of the contamination be cleaned up and removed from these areas. If the various INL areas are to be stabilized then we would request that DOE continue to look into future technology for further cleanup that may enhance the protection environment. This is regardless of what cleanup activities that are pursued.	*Thank you for your concerns on how the DOE will fully implement measures that are most protective of human health and the environment. The preferred alternative for the LOFT facility is protective of human health and the environment, while being protective of the worker during the decommissioning project. Alternative 2 will leave some radioactive contamination at the LOFT facility. This contamination will decay away to less than 1.0E-06 risk at the end of the DOE Institutional Control period in 2095. No change to the document.*

Comment No.	Comment/Issue	Resolution
44	Willie Preacher, Director Tribal/DOE Program Safety of the workers is another of our concern, it seems that with the recent awarding of the new contractor CWI there is a number of accidents that have happened. Our concern is that they need to be trained and aware of all safety and technical issues that surround the job they are to be completing. Reduction of the footprint is not of the main concern but the safety of the workers, environment and the public that may be affected.	*Thank you for your concerns on worker safety. Safety of the worker is a primary concern for the INL as well. It can be assured that the DD&D workers will be trained to the highest level of competence for the task. The D&D organization has implemented D&D block training for the workforce. This block training includes over 20 courses that focus on job hazards and hazard controls. Some examples include:* • *Radiological Worker Qualification* • *Asbestos Awareness Qualification* • *Scaffold User Qualification* • *Tool Use and Safety* • *Personnel Protective Equipment* • *Heat Stress/Cold Stress Awareness* • *Additional courses are listed in the ICP training database.* *No change to the document.*

Appendix B

Citizens Advisory Board Comments

INL SITE ENVIRONMENTAL MANAGEMENT
Citizens Advisory Board

06-CAB-031

February 16, 2006

Rick Provencher
U.S. Department of Energy
Idaho Operations Office
1955 N. Fremont Ave., MS 1222
Idaho Falls, ID 83415-1220

Dear Mr. Provencher,

The Idaho National Laboratory (INL) Site Environmental Management Citizens Advisory Board (CAB) End State Committee has reviewed the Engineering Evaluation/Cost Analysis (EE/CA) for the Loss-of-Fluid Test (LOFT) Area dated January, 2006. The document is well written and adequately addresses most areas of concern to the CAB.

As the scope of this document is limited to the analysis of alternatives for the decommissioning of TAN-630 and TAN-650, the EE/CA is relatively accessible to the general public reader. One area not reader-friendly is the information provided about remaining radionuclide inventories. Comparing total activity levels of curies in 2005 with those in 2095 does not give the general public a clear understanding of the situation. Using an everyday experience to relate the risk from the remaining radionuclide inventories would clarify the actual risk factor for the average person. One example the Committee suggests is comparing the radiation received in dental procedures or medical imaging procedures to the end-state curies at the project site.

Because of the history and continuing issues with waste management on the INL site, it would be beneficial if documents such as this EE/CA contained clear, unambiguous paths forward for waste generated by the proposed project. Chapters 6.2 – 6.4 do not give the reader adequate confidence that there will be a final repository/venue available for the generated waste. While the Committee recognizes that Waste Acceptance Criteria (WACs) are not "set in stone", that technological advances change how things are done, and that factors beyond the control of the Department of Energy (DOE) may come into play, the Committee suggests that those areas of this EE/CA dealing with the disposition of waste be clarified.

The End State Committee appreciates the willingness of Jim Cooper and Mark Shaw to provide information and answers to its questions. We recognize and appreciate the importance of on-going discussions.

It should be noted that this letter does not constitute a consensus-based recommendation from the full CAB, but rather a Committee generated response to a document assigned to it by the full board. The Public Comment period for this document ends on February 20, 2006. The next scheduled CAB meeting is not until the third week in March, thus it would be quite difficult for the full board to generate a consensus recommendation to this EE/CA. As the CAB instrument of choice for comment is the recommendation supported by full board consensus, it would be most helpful if the Public Comment Period for future documents include consideration of the CAB meeting cycle.

Sincerely,

Annemarie Goldstein by LJA

Annemarie Goldstein
Chair, CAB End State Committee

cc: Jim Cooper, DOE-ID
Mark. Shaw, DOE-ID
Shannon Brennan, DOE-ID

Appendix C

Shoshone-Bannock Tribes' Comments

Willie Preacher, Director, Tribal/DOE Program
P.O. Box 306, Fort Hall, Idaho 83221
208-478-3706

To: **R. Mark Shaw**
Date: **February 20th, 2006**
Re: **Comments for the EE/CA for the Loss of Fluid Test Area.**

We thank the Department of Energy, and U.S. EPA for allowing us to comment on this decommissioning project. This comment is in general and not only will address this issue but other endeavors destined for cleanup.

The Shoshone-Bannock Tribes have previously used the INL for generations and generations prior to the site being established and they utilized the area for travel ways to and from hunting grounds, they used the caves for shelter and for short and long term occupancy. They used this area also for traditional and ceremonial use that has been passed through to new generations by historical teachings and stories of significant events during the history of our Tribe. Therefore the Tribes have an interest in this area and are concerned with the type of cleanup that is being performed at this time.

We have always understood that DOE has maintained that cleaning up the various areas of the site has been a major priority, that they will do the most efficient job on cleaning up areas of the INL. It is our preference during clean up that all of the contamination be cleaned up and removed from these areas. If the various INL areas are to be stabilized then we would request that DOE continue to look into future technology for further cleanup that may enhance the protection environment. This is regardless of what cleanup activities that are pursued.

Safety of the workers is another of our concern, it seems that with the recent awarding of the new contractor CWI there is a number of accidents that have happened. Our concern is that they need to be trained and aware of all safety and technical issues that surround the job they are to be completing. Reduction of the footprint is not of the main concern but the safety of the workers, environment and the public that may be affected.

February 10, 2006

Tribal Air Quality Dept.
Shoshone-Bannock Tribes
P.O. Box 306
Fort Hall, ID 83203

R. Mark Shaw
U.S. Department of Energy
P.O. Box 1625 MS 1222
Idaho Falls, Idaho 83415-1222

Transmitted ELECTRONICALLY to: Shawrm@id.doe.gov

Subject: Comments on proposed Decommissioning of TAN-630 and TAN 650 at the Loss-of-Fluid Test (LOFT) Area

Dear Mr. Shaw:

Thank-you for the opportunity to comment on this important clean-up at the INL.

Background: The Shoshone-Bannock Tribes (Hereafter "Tribes") are very concerned about the contaminants in the soil and groundwater from past practices at these Test Area North (TAN) facilities. According to Idaho Division of Environmental Quality (IDEQ) the Loss-of-Fluid-Test (LOFT) Facility is expected to contain mercury, depleted uranium, transuranic, and RCRA hazardous constituent contamination. Both TAN facilities have contaminated piping and ducts, sumps, drains, and heavy lifting equipment. The contaminated ground water plume underneath TAN is roughly two miles long. The contaminant is primarily organic cleaning solvents (trichloroethylene), with some radionuclides. These wastes were injected into the Snake River Aquifer during the 1950s, continuing until 1972. These facilities are a part of Waste Area Group (WAG) 1, and the contamination is considerable. Wastes were injected into the Snake River Plain Aquifer, the same aquifer from which the Tribes depend for spring water and groundwater pumping.

Comments:
The Tribes are an affected Tribe with respect to DOE EM/Clean-up plans and activities, and should have a role in DOE's planning and implementation process for environmental restoration and waste management. DOE should work closely with the Tribes on a government-to-government basis, as outlined in the President's Memorandum of April 24, 1994 on Government-to-Government Relations With Native American Tribal Governments (Fed. Reg. Vol. 59, No. 85, May 4, 1994). The responsibility is described:"In carrying out this relationship with the Tribes, the DOE will assess the impact of DOE's plans, projects, programs, activities on tribal trust resources and assure that tribal government rights and concerns are considered during the development of such plans, projects, programs, and activities."

Removal Action violates CERCLA - The purported need to use a Removal option rather than a normal CERCLA-based remedial track was not adequately described. How is it that these facilities (TAN 630 and 650) were both deactivated twenty years ago, and yet DOE claims that now need to carry out a "streamlined" clean-up through a Removal action, rather than a longer, and typically more thorough, CERCLA-based RI/FS remedial process? According to CERCLA:

> Remedial actions involve the study, design, and construction of long-term actions directed toward permanent remedy. In contrast, removal actions are short-term actions typically taken within hours, weeks, or months to "abate, prevent, minimize, stabilize, mitigate, or eliminate the release or threat of release" [40 CFR 300.415(b)].

Obviously this clean-up is not one that will take "hours, weeks, or months" rather this one that is more accurately describes as "decades", and is clearly not consistent with CERCLA requirements for a "Removal" option. That is, DOE has waited since 1985 --- twenty years since these units were deactivated--- to initiate a "short-cut method" (a"Removal") of clean-up. Indeed many units of the TAN facility were shut down long before that: The Material Test Reactor (MTR), for example, was defueled in 1970; the Engineering Test Reactor (ETR) was shut down in 1981. More specifically, CERCLA and the NCP authorize two types of responses to releases of hazardous substances into the environment: remedial and removal actions. According to the Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), it states:

> "Most importantly, non-time critical removal actions usually will provide benefits to worker safety, public health, and the environment more rapidly and cost effectively than remedial actions"

DOE's own CERCLA Brief (*DOE/EH-413-9811 (April 1998))* indicates that Non-Time-Critical Removals are to be used to respond to short-term threat of releases:

> DOE and the U.S. Environmental Protection Agency (EPA) support the use of non-time-critical (NTC) removal actions to respond quickly to releases or threats of releases.

No detailed rational was provided to the Shoshone-Bannock Tribes that compared the benefits of this proposed "streamlined" non-time critical removal to that of DOE taking the traditional CERCLA remedial process, the latter process could have been completed years ago. (While it is true that minor RCRA activities have been carried out over the past few years, there is no reason that the CERCLA process could not have gone forward at the same time.

According to DOE's own Non-Time Critical NTC Guidance (DOE/EH-413-9811) removals generally attempt to control the source of contamination and are sometimes followed by a remedial action to complete site response.. Why has DOE not offered this type of alternative?

Section 5.1.2 indicates that under Alternative 2, a protective cover would be constructed and it would then remain undisturbed for perpetuity. I have several concerns about this: How long is perpetuity? What is the protective cover made of? How long is the protective cover expected to last (please provide engineering analyses)? What would be the groundwater impacts, if ground- or surface-water infiltrated the TAN-650, and migrated with the contaminants, under alternative 2 and 3? How is it that DOE, in some cases, refers to the institutional control as "perpetual" and in other cases refers to a date of 2095?

Restoration of INL: The Tribes support the complete clean-up, both for Radionuclides and RCRA wastes from the entire site at TAN 630 and TAN 650. The Tribes do not believe that DOE is adequately considering the Tribes interest when an alternative is selected as preferred by DOE that not only leaves the waste untreated, but also leaves that area of INL restricted to the Tribes future use until 2095, or later. That is, it is wrong for DOE to leave radioactive contamination in any sumps, piping, sub-structures or soils at these sites. The Shoshone-Bannock Tribes have consistently, over the years, advocated that the DOE at INL, once it's missions are complete at each facility, return the lands to the Department of Interior, whereupon the Tribes may then have unrestricted access to them. This Treaty right cannot ever be provided to the Tribes if DOE decommissions these sites with contamination remaining, and with fences, restrictions, or administrative controls that deny access to the Tribes. To that extent, the Tribes request complete restoration of the TAN 650 and TAN 630, back to their native state. DOE has had twenty years since these facilities have been deactivated –plenty of time to have carried out a completed RCRA and CERCLA clean-up that does not leave unacceptable amounts of waste behind.

Alternative Selection:
Given the above backdrop, the DOE should include additional alternatives that: utilize a CERCLA RI/FS-remedial track for clean-up, and compare those risks, and benefits with that of a Removal. Similarly, the DOE should add another alternative, whereby a Removal is initially done, but is then followed by a typical CERCLA Remedial clean-up with a full Remedial Investigation and Feasibility Study. The most obvious deficit in the alternatives is the lack of one that removes all RCRA and CERCLA waste and provides that the TAN sites site be restored.

In the alternative analysis, DOE indicates that there will be an increase risk of exposure to workers if Alternative No. 1 is used because of additional exposure to the radiation from removing the piping and sumps. In an other section, however, DOE is quick to point out that all, or nearly all, waste from TAN 630 and 650 can be sent to a landfill. If the material is so benign as to be accepted at a simple landfill, it does seem logical that it will be a significant threat to the workers. But, on the other hand, if it is a significant risk to workers to remove the piping and containment building, why is it sent to a landfill where fugitive dust and erosion can uncover and re-distribute the contamination?

Summary
Doe may have made an error that violates CERCLA by limiting the clean-up options to a removal rather than initiating a more thorough RI/FS remedial track, in so far as "Removals" are designed for a short-term threat, while these sites have been deactivated twenty or more years ago, giving ample time to DOE to clean them up under a standard CERCLA remediation schedule. It makes no sense for DOE to wait twenty years and then propose a more stream-lined, quick analyses and clean-up. DOE is selecting as a preferred alternative (No. 2) a clean-up that would leave a contaminated containment structure and piping, rather than completely remediating and restoring the site. None of the alternatives provides a way for the lands at TAN 650 and TAN 630 to be returned to their native state, one that would allow the Shoshone-Bannock Tribes to hunt, fish and travel through, as provided in their Treaty. Clearly, the DOE needs to re-think the alternatives, and provide one or more alternatives that restore these lands and return them to the Department of Interior without radiological contamination remaining, or restrictions, or fencing.

Sincerely yours,

Roger Turner
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Shoshone-Bannock Tribes